

**Philadelphia Zoo to Paoli Transmission Line Project
Environmental Assessment (EA) and
Draft Section 4(f) Evaluation**

Prepared by:
Federal Railroad Administration (FRA)

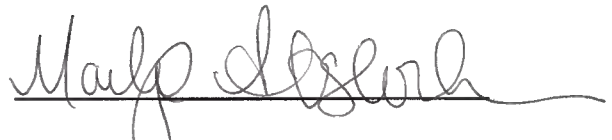
Pursuant to:

National Environmental Policy Act (42 U.S.C. § 4321 et seq.), and implementing regulations (40 CFR Parts 1500-1508), 23 CFR §771, Section 4(f) of the U.S. Department of Transportation Act (49 USC §303) and implementing regulations (23 CFR Part 774); FRA Procedures for Considering Environmental Impacts (64 Fed. Reg. 28545, May 26, 1999); National Historic Preservation Act (54 USC §306101 et seq.) and implementing regulations (36 CFR Part 800); Clean Air Act as amended (42 USC §7401 et seq.) and implementing regulations (40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC §1531-1544) and implementing regulations (50 CFR Part 402); the Clean Water Act (33 USC §1251-1387) and implementing regulations (33CFR Parts 320 to 324 and 40 CFR Part 230); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC §4601).

Approved:

3/24/17

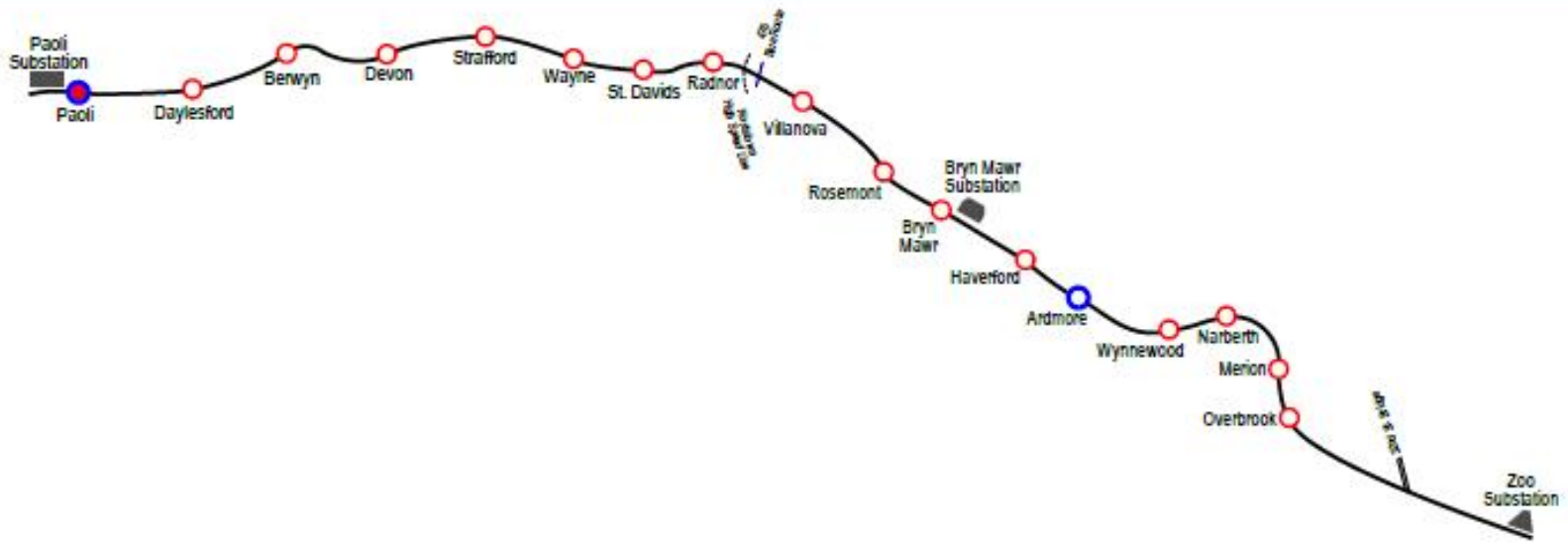
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Environmental Assessment and Draft Section 4(f) Evaluation for the Philadelphia Zoo to Paoli Transmission Line Project

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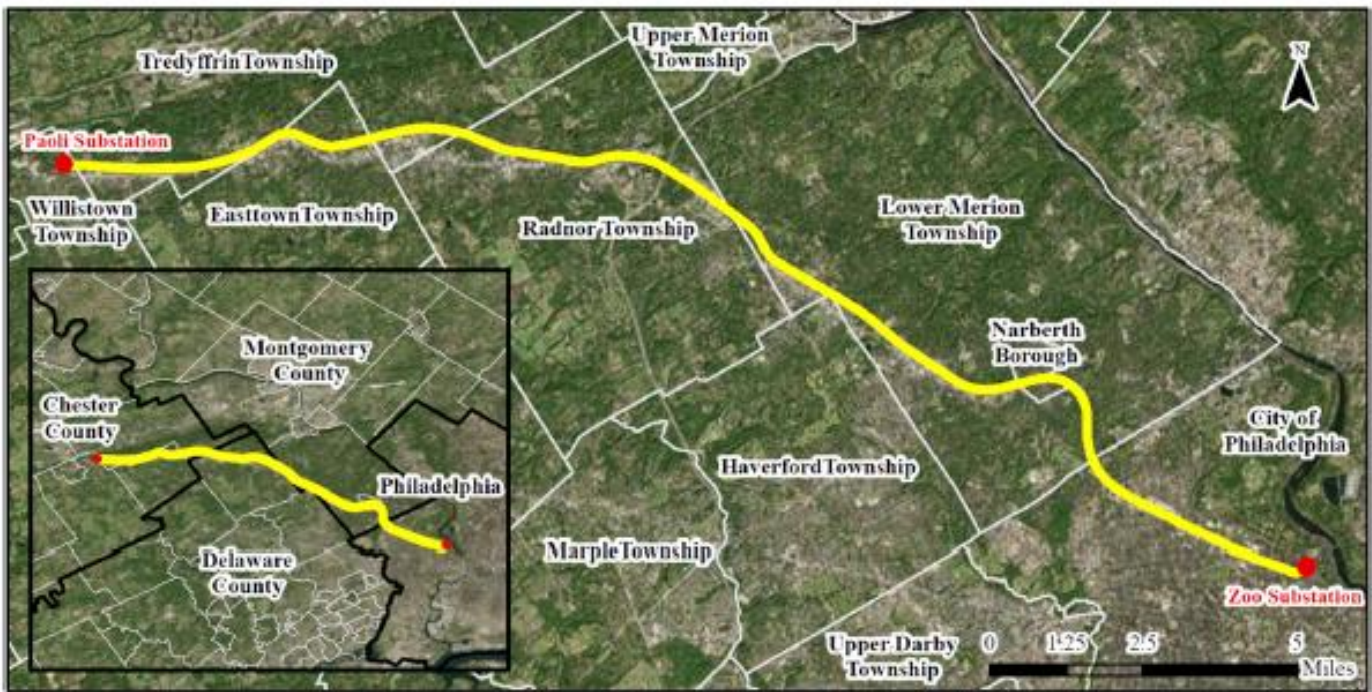


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EXECUTIVE SUMMARY (ES)

This Environmental Assessment (EA) has been prepared for the Philadelphia Zoo to Paoli Transmission Line Project to provide the Federal Railroad Administration (FRA) and the public with a full accounting of the environmental impacts of proposed improvements to the deteriorated electrification system on an 18 mile portion of the Keystone Corridor East within the existing Amtrak right-of-way between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5) and the construction of new transmission lines in Amtrak right-of-way to replace the existing transmission lines in the former Pennsylvania Railroad right-of-way (Proposed Action). This EA serves as the primary document to facilitate review of the Proposed Action by federal, state, and local agencies and the public. This EA was produced pursuant to the Council on Environmental Quality's implementing regulations (40 C.F.R. Parts 1500-1508), FRA's Procedures for Considering Environmental Impacts, 64 Federal Register [FR] 28545 (May 26, 1999), 49 CFR § 260.35, and other applicable laws and regulations.

ES – Purpose and Need

Pennsylvania's Keystone Corridor East is a rail route owned by Amtrak, extending from Philadelphia to Harrisburg. The Proposed Action involves improvements to the deteriorated electrification system on an 18 mile portion of the Keystone Corridor East within the existing Amtrak right-of-way between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5). The Proposed Action would cross through Philadelphia, Montgomery, Delaware, and Chester counties in Pennsylvania. The Proposed Action involves construction of new transmission lines, replacement of 276 and addition of 49 catenary structures (325 total), construction of one additional gantry at Paoli Substation, and replacement of the obsolete substation at Bryn Mawr (Bryn Mawr Substation).

The purpose of the Proposed Action is to maintain and improve passenger train service using electric-powered trains on the Keystone Corridor East between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5). In addition, a goal of the Proposed Action is to simplify maintenance, including maintenance access. The needs addressed by the Proposed Action include deteriorated catenary poles and related electrical equipment, insufficient traction power, and also the location of transmission lines on former Pennsylvania Railroad right-of-way that complicate maintenance of these lines.

ES – Alternatives Analysis

This EA evaluates a No-Build Alternative and a Build Alternative, referred to as the Proposed Action.

Under the No-Build Alternative, no catenary structures, catenary wires, and transmission lines would be upgraded. The existing Bryn Mawr Substation would be left standing without upgrades. There would be no change to the transmission lines within the former Pennsylvania

Railroad right-of-way. The No-Build Alternative involves risks, including a breakdown of the system and loss of service, as the catenary structures, catenary wires, and transmission lines are showing signs of substantial deterioration and frequently require extensive repairs that increase safety risk for Amtrak's maintenance crews. Amtrak and the Southeastern Pennsylvania Transportation Authority (SEPTA), which both operate over this segment, would still experience low-voltage conditions in the middle section, which would likely worsen over time. The No-Build Alternative would result in no change in environmental impacts to resources compared to existing conditions. The No-Build Alternative is not recommended as it does not meet the Proposed Action's stated purpose and need.

The Proposed Action includes the following components:

- Construction of new 138 kilovolt transmission lines within Amtrak right-of-way to replace aging and inaccessible transmission lines that are not on Amtrak right-of-way. The power feed to the existing transmission lines would be deactivated, but the existing infrastructure would not be physically altered.
- Replacement of 276 and addition of 49 catenary structures (325 total) within Amtrak right-of-way. The new catenary structures would carry both the catenary lines and the new transmission lines. The existing catenary structures consist of a pair of vertical poles on the field side of the outermost track that are joined together by wire head-spans. Only the catenary poles and head-spans would be replaced, because the existing overhead contact system is in good condition. An increase in catenary pole height is necessary to accommodate the new Amtrak transmission line and meet Amtrak and National Electric Safety Code required clearances. The 276 existing catenary structures would be replaced within 10 feet of their current locations, but 49 additional catenary structures would also be added at new locations for a proposed total of 325 catenary structures. The additional structures are needed to reduce spacing, to avoid station canopies, and to add catenary structures adjacent to overhead bridges where there are currently none.
- Construction of one additional gantry (a structural framework for supporting high-voltage switches) at Paoli Substation.
- Demolition of the obsolete Bryn Mawr Substation and construction of two new traction power substation buildings at the same location on a slightly larger footprint.

Beyond the aforementioned replacements of the Bryn Mawr Substation and 276 catenary structures, none of the extant train stations or other major built elements of the railroad corridor would be demolished or otherwise physically affected.

ES – Affected Environment

This EA focuses on those resources that have a reasonable likelihood to be impacted by the Proposed Action. Navigable waterways, coastal zones, wetlands, farmlands, and critical habitats

are not present within the Proposed Action area and are therefore not addressed in this document. Resources present within the Proposed Action area were identified using a combination of agency review/coordination, secondary and on-line resource reviews, and field surveys. Resource areas addressed in the EA include:

- Location and Land Use
- Cultural Resources
- Parks and Wildlife Refuges
- Transportation
- Noise and Vibration
- Electric/Magnetic Fields
- Air Quality
- Hazardous Materials and Waste
- Property Acquisition and Easements
- Communities
- Environmental Justice
- Visual
- Floodplains
- Water Quality
- Endangered Species
- Public Safety
- Construction

ES – Environmental Impacts

This EA evaluates anticipated direct, indirect, and cumulative impacts of the Proposed Action to the resources present within the Proposed Action area to determine if these impacts would be significant. The impacts evaluation is based on appropriate federal and state laws, regulations, and agency guidelines. Evaluation methodologies and impacts to resources are discussed in detail in Section 3.0.

This EA concludes that the Proposed Action, which includes mitigation measures and environmental commitments discussed below, would have no potential significant environmental impacts. Mitigation measures are listed in Table ES-1. Table ES-2 details environmental commitments, which have been incorporated into the planning and design of the Proposed Action in order to avoid, minimize, or mitigate potential impacts.

Table ES-1: Mitigation Measures	
Potential Impact	Mitigation
<p>Cultural Resources:</p> <p>The Proposed Action would have an adverse effect on the National Register eligible Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) due to the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation.</p>	<p>A Draft Memorandum of Agreement (MOA) has been developed between the FRA, Amtrak, Railroad Museum of Pennsylvania (RRMPA), SEPTA, and the Pennsylvania State Historic Preservation Office (PA SHPO), which includes commitments by Amtrak to minimization measures and mitigation measures to minimize impacts and to mitigate potential adverse effects to the Pennsylvania Railroad Main Line and its contributing resources.</p> <p>Minimization Measures:</p> <ul style="list-style-type: none"> A. Limit catenary structure heights (60-75 feet at most locations); B. Implement targeted tree trimming program to avoid universal trimming or clear cutting;

Table ES-1: Mitigation Measures	
Potential Impact	Mitigation
	<p>C. Place new catenary structures as near as practicable to existing catenary structures; and</p> <p>D. Avoid physical impacts to train stations along the Proposed Action corridor.</p> <p>Mitigation Measures:</p> <p>A. Documentation</p> <ol style="list-style-type: none"> 1. Record the Bryn Mawr Substation and related catenary system to Historic American Engineering Record Documentation Level II. <p>B. Interpretation</p> <ol style="list-style-type: none"> 1. Provide an interpretive sign inside the Bryn Mawr station building. 2. Donate materials and elements of the catenary system that Amtrak or its contractors remove from the historic Bryn Mawr Substation to RRMPA. 3. Make financial contribution to RRMPA dedicated to the conservation of donated materials. 4. Make reasonable efforts to provide to RRMPA contact information for current or former Amtrak Electric Traction Department employees for the purpose of conducting oral history interviews. <p>C. Design</p> <ol style="list-style-type: none"> 1. Design new substation to be consistent with the materials, color, and texture of the existing Bryn Mawr Substation (e.g. buff brick exterior walls), but will not mimic the historic building to make it clear that the new buildings are non-historic and do not create a false sense of history. Amtrak will submit the proposed design to PA SHPO for review and approval prior to construction; PA SHPO will provide comments within 30 days of receipt of the draft design. 2. Incorporate the “Bryn Mawr Substation” sign currently on the historic building into a new retaining wall or other landscape feature adjacent to the Bryn Mawr Substation site. 3. Offer the bricks from the historic Bryn Mawr Substation for salvage upon removal of the building. <p>An Unanticipated Discoveries Plan has also been created and appended to the Draft MOA, in case any unanticipated archaeological</p>

Table ES-1: Mitigation Measures	
Potential Impact	Mitigation
	<p>resources are encountered during construction.</p> <p>The Draft MOA’s stipulations for minimization, mitigation, and design measures will minimize impacts and mitigate the adverse effect of the Proposed Action.</p>
<p>Transportation: Parking spaces would be lost at the Bryn Mawr Train Station.</p>	<p>Replacement of the Bryn Mawr Substation would affect parking that Amtrak leases to SEPTA at the Bryn Mawr Train Station. Impact avoidance is not feasible, so the impact would be minimized by designing the substation to have the smallest possible footprint without losing the intended functionality. While this compact substation design would result in higher construction costs, it would reduce the number of affected parking spaces from 36 to 12.</p>
<p>Visual: Taller catenary poles, tree trimming, and the replacement of the Bryn Mawr Substation were identified as concerns for potential impacts to the area adjacent to the Proposed Action during the public involvement process.</p>	<p>While the Draft MOA for Cultural Resource impacts serves to minimize and mitigate potential impacts to cultural resources, some of the same Draft MOA minimization and mitigation measures serve to minimize and mitigate visual impacts. Minimization measures include:</p> <ul style="list-style-type: none"> A. Limit catenary structure heights (60-75 feet at most locations); B. Implement targeted tree trimming program to avoid universal trimming or clear cutting; C. Place new catenary structures as near as practicable to existing catenary structures; and D. Design new Bryn Mawr Substation to be consistent with the materials, color, and texture of the existing Bryn Mawr Substation (e.g. buff brick exterior walls), but will not mimic the historic building to make it clear that the new buildings are non-historic and do not create a false sense of history.

Table ES-2 details the environmental commitments that Amtrak would incorporate during the final design and construction phases, to avoid, minimize and/or mitigate potential impacts, as appropriate.

Table ES-2: Environmental Commitments
Environmental Commitment
<ul style="list-style-type: none"> • Amtrak would comply with the cultural resources MOA, which includes minimization and mitigation measures that require documentation, interpretation, and design elements to be included as part of the Proposed Action and in the Proposed Action Design Plan Notes.

Table ES-2: Environmental Commitments

Environmental Commitment

- The MOA includes an Unanticipated Discoveries Plan that Amtrak would implement if any archaeological resources are encountered during construction.
- Tree trimming plans have been included in the Proposed Action’s Design Plans. The tree trimming plans identify specific tree trimming locations, to avoid universal tree trimming or clearcutting throughout the Proposed Action area prior to construction.
- Amtrak would develop and implement a Community Notification Plan to communicate construction timing and phasing to the community.
- Applicable best management practices concerning construction activities including, but not limited to, vibration, noise, and light emissions would be incorporated into the Proposed Action’s Design Plan Notes, as appropriate. Design Plan Notes would prohibit blasting construction activities. The contractor would be responsible for conforming to all Plan Note requirements during construction.
- Threatened and endangered species clearances with the Pennsylvania Game Commission (PGC), the Pennsylvania Department of Conservation and Natural Resources (PA DCNR), the Pennsylvania Fish and Boat Commission (PFBC), and the U.S. Fish and Wildlife Service (U.S. FWS) would be re-coordinated by Amtrak, as needed or required by state and federal regulations prior to construction.
- The construction contractor would follow Amtrak’s established hazardous materials and waste procedures during the Proposed Action. Old electrical transformers, which may contain polychlorinated biphenyl (PCB) oil, would be removed and replaced as part of the Proposed Action. Amtrak’s established procedures for testing and draining transformers prior to disposal would be implemented. Amtrak maintains contracts with multiple firms for emergency response and waste hauling services.
- In case hazardous waste may be encountered during construction, a Soil Management Plan has been created. This plan specifies waste management procedures and precautions for construction activities within areas of environmental concern within the construction zone.

ES – Agency Coordination and Public Involvement

Agency coordination was conducted with the FRA, Amtrak, RRMPA, SEPTA, and the PA SHPO regarding cultural resources. The comments received from these agencies were incorporated into the cultural resources analyses, as well as the Draft MOA. Agency coordination was also conducted with the PGC, the PA DCNR, the PFBC, and the U.S. FWS regarding threatened and endangered species, with a response from each of these regulatory agencies that no impacts to threatened and endangered species were anticipated.

Feedback on the Proposed Action was also solicited from public officials, stakeholders, Consulting Parties, and the general public at 10 stakeholder and public meetings held between April 2012 and September 2015. Information was presented and handed out, with comments solicited/provided through question-and-answer discussions and written surveys. The primary

areas of concern identified from public involvement are visual impacts caused by higher catenary poles and tree trimming, as well as impacts related to cultural resources, construction noise/lights, fate of retired equipment, public outreach, the demolition of Bryn Mawr Substation, and vibration. This EA evaluated these, as well as other, potential impacts of the Proposed Action. A public meeting will be held to present this EA to the public for comment on the EA and on the Proposed Action itself.

The outcome from agency coordination and concerns raised during public involvement activities were considered and incorporated, as appropriate, during the design and environmental review processes. This resulted in elevating the National Environmental Policy Act document for the Proposed Action from a Categorical Exclusion to an EA, altering the pole height design, establishing mitigation measures, and establishing the environmental commitments.

ES – Section 4(f)

Chapter 4.0 provides the Draft Section 4(f) Evaluation for the Proposed Action. A Section 4(f) Evaluation determines if an action requires the use of a Section 4(f) resource. The Draft Section 4(f) Evaluation determined that:

- There would be no temporary or permanent use of public parks or public wildlife refuges resulting from temporary occupancy, permanent incorporation or easement, or proximity impacts so severe that the protected activities, features, or attributes of the property are substantially impaired.
- The Proposed Action will require use of five individually eligible or listed historic resources: Merion Station, Haverford Station, Villanova Station, Wayne Station, and Strafford Station. It appears that the Proposed Action will take place within the boundaries of these five historic properties. The PA SHPO concurred with FRA's Section 106 finding of no adverse effect on these five historic properties within the boundaries of the Proposed Action work area. Consulting Parties were involved in the effects determination. Therefore, pursuant to 49 U.S.C. § 303(d), a Section 4(f) finding of *de minimis* impact is applicable to the 5 resources with findings of no adverse effect within the Proposed Action work area. PA SHPO concurred with this Section 4(f) *de minimis* use finding on March 7, 2017.
- PA SHPO also concurred with FRA's finding of no adverse effect on an additional 5 historic properties and no historic properties affected for 16 historic properties, all outside of the Proposed Action work area. There is no Section 4(f) use of these 5 resources with findings of no adverse effect or the 16 historic properties with findings of no historic properties affected, with all of these properties being outside of the Proposed Action work area. Section 4(f) requirements are considered satisfied for these 21 historic resources.

- FRA has determined that the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation would amount to a use of the Pennsylvania Railroad Main Line. Through Section 106 consultation, FRA made a finding of adverse effect for the Pennsylvania Railroad Main Line. The Pennsylvania Railroad Main Line would be adversely affected due to the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation, both of which are contributing resources to the Pennsylvania Railroad Main Line. PA SHPO has concurred with this finding. Because the Proposed Action will result in a use of and an adverse effect on the Pennsylvania Railroad Main Line, avoidance alternatives and measures to minimize harm were considered as part of the Section 4(f) process. The analysis determined that there are no feasible and prudent avoidance alternatives, but all possible planning to minimize harm would be incorporated into the Proposed Action to preserve the historic attributes of the railroad. FRA and the official with jurisdiction over the Section 4(f) resource (the PA SHPO) have agreed to the measures to minimize harm in accordance with the consultation process under 36 CFR Part 800.

1.0 INTRODUCTION

Amtrak proposes improvements on the Keystone Corridor East, within the existing Amtrak right-of-way between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5), including construction of new transmission lines, replacement of 276 deteriorated catenary structures and addition of 49 catenary structures, construction of one additional gantry at Paoli Substation, and replacement of the obsolete substation at Bryn Mawr (Proposed Action). Because the Federal Railroad Administration (FRA) anticipates funding the Proposed Action, it has prepared this Environmental Assessment (EA) to evaluate the Proposed Action's environmental impacts in compliance with the National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA). NEPA requires federal agencies to consider the impacts of their action on the natural, social, economic, and cultural environment and to disclose considerations in a public document. The purpose of this NEPA document is to provide the FRA and the public with a full accounting of the environmental impacts of the alternatives developed to meet the Proposed Action purpose and need. The EA serves as the primary document to facilitate review of the Proposed Action by federal, state, and local agencies and the public. This EA was prepared in compliance with NEPA, Council on Environmental Quality's implementing regulations (40 C.F.R. Parts 1500-1508), the FRA's Procedures for Considering Environmental Impacts, 64 Federal Register [FR] 28545 (May 26, 1999) and 49 CFR § 260.35, and other applicable laws and regulations.

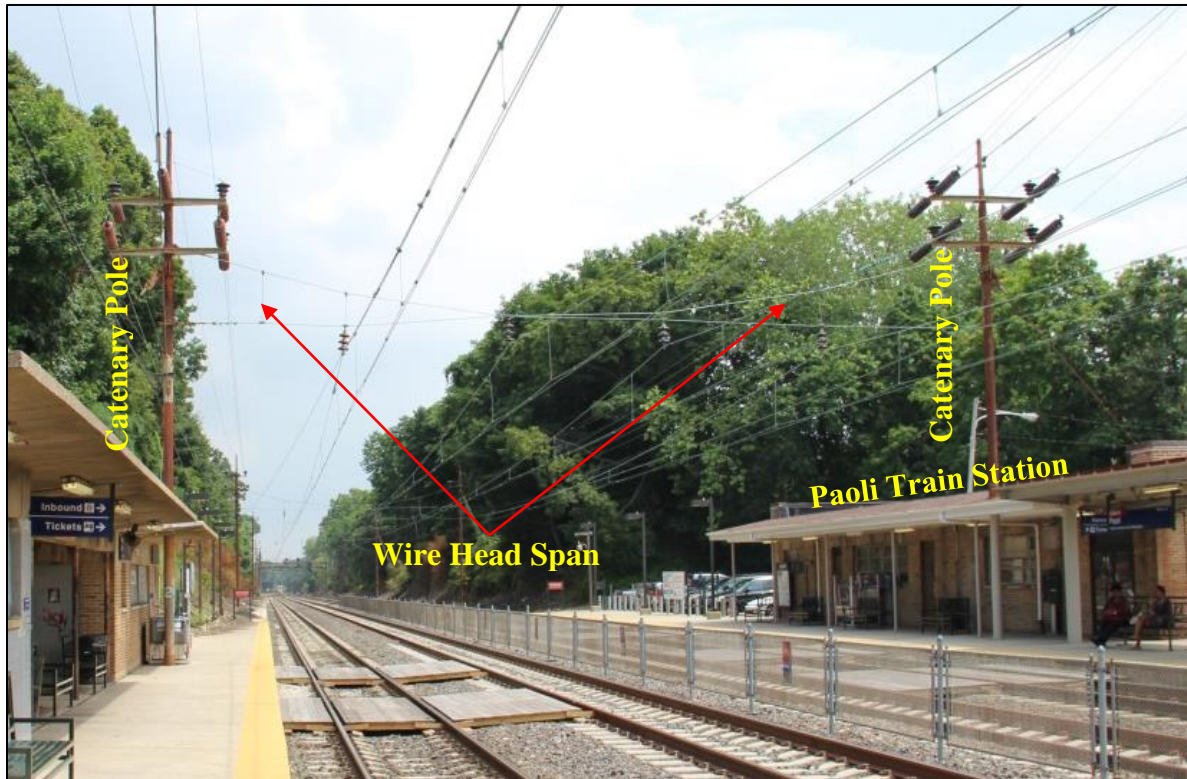
1.1 Purpose and Need

The purpose of the Proposed Action is to maintain and improve passenger train service using electric-powered trains on the Keystone Corridor East between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5). In addition, a goal of the Proposed Action is to simplify maintenance, including maintenance access. The needs addressed by the Proposed Action include deteriorated catenary poles and related electrical equipment, insufficient traction power, and the location of transmission lines on former Pennsylvania Railroad right-of-way that complicate maintenance of these lines.

1.2 Existing Conditions

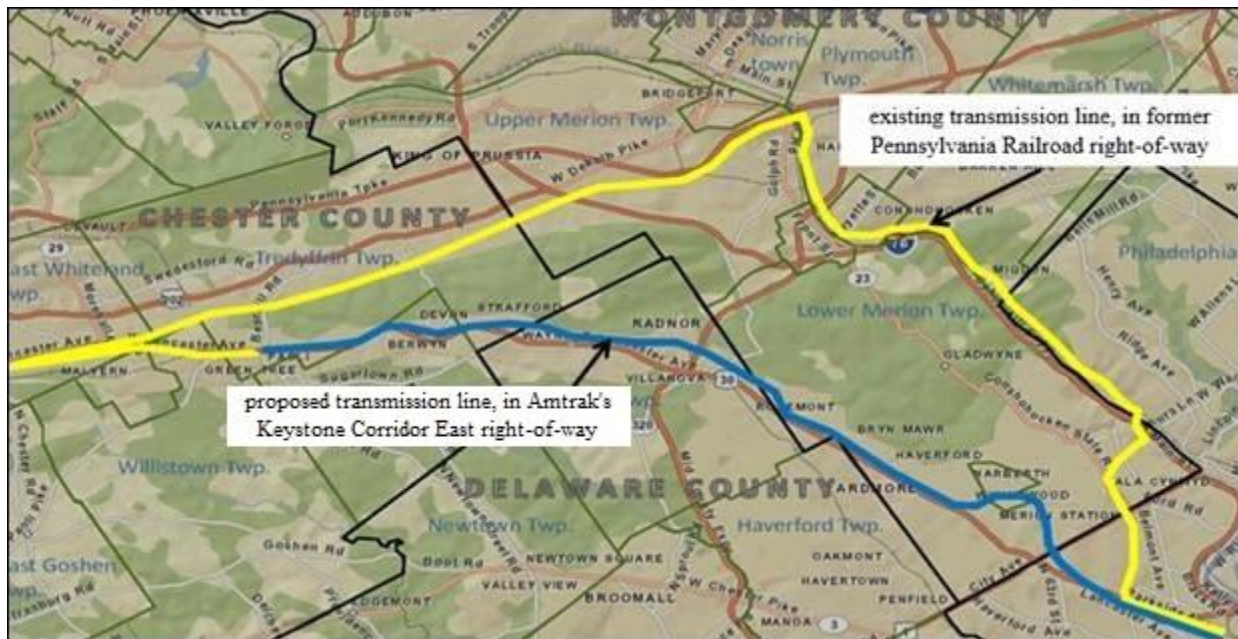
The Proposed Action is recommended in response to substantial deterioration and frequent, extensive, emergency repairs to 276 existing catenary structures on Amtrak's Keystone Corridor East. The existing catenary structures consist of a pair of vertical poles on the field side of the outermost track that are joined together by wire head-spans (see Figure 1). These catenary structures are approaching 100 years in age and are beyond their useful life.

Figure 1: Catenary Structure Photograph



Additionally, low voltage conditions are currently experienced in the middle of the 18 mile stretch between Zoo Substation and Paoli Substation, as this is the only segment of the Keystone Corridor East that has not had a traction power upgrade. Low voltage conditions result in slower, less reliable operation.

Finally, the existing transmission lines that feed electrical power to Amtrak's Keystone Corridor East overhead contact system are not located along Amtrak's Keystone Corridor East right-of-way, but are located along the former Pennsylvania Railroad right-of-way (see Figure 2). The former Pennsylvania Railroad right-of-way is difficult for Amtrak maintenance crews to access. There are no public access points, and vegetation along this abandoned rail line is overgrown.

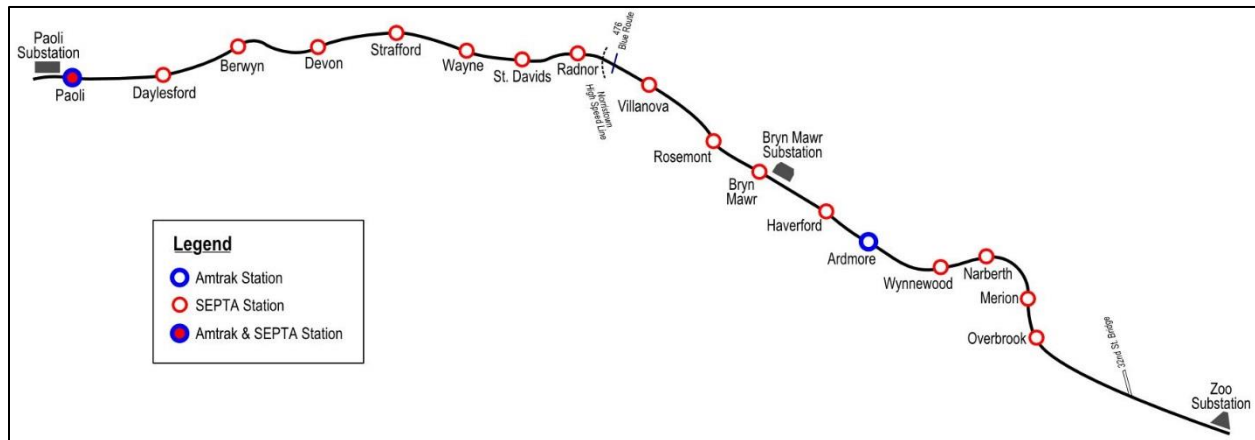
Figure 2: Existing and Proposed Transmission Right-of-way

1.3 Proposed Action Area

The Proposed Action would occur entirely within the existing Amtrak right-of-way along an existing 18 mile section of the Keystone Corridor East between the Zoo Substation (Mile Post 2.5) in central Philadelphia, PA, and the Paoli Substation (Mile Post 20.5) in Chester County, PA. The Amtrak right-of-way width varies throughout the Proposed Action area. Typically, it is between 90 and 150 feet, but is wider at stations and is as wide as 250 or 300 feet where the track grading required significant cut or fill.

Figure 3 shows the route between the Zoo and Paoli substations, including Amtrak and/or Southeastern PA Transportation Authority (SEPTA) passenger stations.

Figure 3: Substations and Passenger Stations within the Proposed Action Route



Land uses surrounding this section of the corridor consist mainly of residential and commercial uses (see Section 3.1 for details). Topographic maps are included as Appendix A, and aerial photographs are included as Appendix B.

1.4 Applicable Regulations and Permits

The following statutes, Executive Orders, and regulations were considered during the preparation of the EA:

- NEPA of 1969, 42 U.S.C. § 4321 et seq.
- Endangered Species Act, 16 United States Code (U.S.C.) § 1531 et seq.
- Clean Water Act, 33 U.S.C. § 1251 et seq.
- Section 404 of the Clean Water Act, 33 U.S.C. § 1344
- Clean Air Act, 42 U.S.C. § 7401 et seq.
- Sections 9 and 10 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 401
- Section 106 of the National Historic Preservation Act of 1966, as amended, 54 U.S.C § 3016108
- Section 4(f) of the U.S. Department of Transportation Act of 1966, 49 U.S.C. § 303
- Section 6(f) of the Land and Water Conservation Act of 1965, 16 U.S.C. § 460
- Executive Order 11988, Floodplain Management, 42 FR 26951, May 24, 1977
- Executive Order 11990, Protection of Wetlands, 42 FR 26961, May 24, 1977
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 11, 1994

- FRA Procedures for Considering Environmental Impacts, 64 FR 28545, May 26, 1999 and 49 CFR § 260.35
- Regulations for Implementing the Procedural Provisions of the NEPA, 40 CFR Parts 1500-1508, November 29, 1978
- Migratory Bird Treaty Act, 16 USC § 703-712
- Bald and Golden Eagle Protection Act, 16 USC § 668-668d
- Federal Register, General Provisions; Revised List of Migratory Birds; Final Rule, 50 CFR Parts 10 and 21, November 1, 2013
- Federal Register, Taking, Possession, Transportation, Sale, Purchase, Barter, Exportation, and Importation of Wildlife and Plants, 50 CFR Part 22 – Eagle Permits. 39 FR 1183, January 4, 1974

The following permits or clearances are required for the Proposed Action:

- Threatened and Endangered Species Consultation (see Section 3.15)
- Section 106 Consultation Process (see Section 3.2)
- Erosion and Sedimentation Control Plan (ESCP) or National Pollutant Discharge Elimination System (NPDES) Permit - General (contractor's responsibility)

2.0 ALTERNATIVES

2.1 Proposed Action

The Proposed Action involves improvements to the electrification system within the existing Amtrak right-of-way between the Zoo Substation and the Paoli Substation on the Keystone Corridor. Components include:

- Construction of new 138 kilovolt transmission lines within Amtrak right-of-way to replace aging and inaccessible transmission lines that are not on Amtrak right-of-way. The power feed to the existing transmission lines would be deactivated, but the existing infrastructure would not be physically altered.
- Replacement of 276 deteriorated catenary structures and construction of an additional 49 catenary structures within Amtrak right-of-way. The new catenary structures would carry both the catenary lines and the new transmission lines. The existing catenary structures consist of a pair of vertical poles on the field side of the outermost track that are joined together by wire head-spans. Only the catenary poles and head-spans would be replaced, because the existing overhead contact system is in good condition. An approximately 15-foot increase in catenary pole height is necessary to accommodate the new Amtrak

transmission line and meet Amtrak and National Electric Safety Code required clearances. The 276 existing catenary structures would be replaced within 10 feet of their current locations, and 49 additional catenary structures would also be added at new locations for a proposed total of 325 catenary structures. The additional 49 structures are needed to reduce spacing, to avoid station canopies, and to add catenary structures adjacent to overhead bridges where there are currently none.

- Construction of an additional gantry (a structural framework for supporting high-voltage switches) at Paoli Substation.
- Demolition of the obsolete Bryn Mawr Substation and construction of two new traction power substation buildings on a footprint roughly 7,000 square feet larger than the current footprint.

There would be no additional demolition or physical changes to the train stations or built elements of the railroad corridor under the Proposed Action.

Designs for the Proposed Action are included as Appendix C. Funding for construction of the Proposed Action has not yet been awarded. It is anticipated that construction would take place between Fall 2017 to Fall 2022.

2.2 No-Build Alternative

Under the No-Build Alternative, no catenary structures, catenary wires, or transmission lines would be upgraded. The existing Bryn Mawr Substation would be left standing without upgrades. There would be no change to the transmission lines within the former Pennsylvania Railroad right-of-way.

The No-Build Alternative involves risks, including a breakdown of the system and loss of service, as the catenary structures, catenary wires, and transmission lines are showing signs of substantial deterioration and frequently require extensive repairs that increase safety risk for Amtrak's maintenance crews. A consequence of the location of transmission lines within the former Pennsylvania Railroad right-of-way is that the existing trains operated by Amtrak and SEPTA experience low-voltage conditions in the middle of this section of railroad during periods of higher train density. This problem is likely to worsen over time, as train traffic is projected to increase in the future. These future increases in train traffic may be limited by the available power supply.

The No-Build Alternative would result in no change in environmental impacts to the resources described in Section 3.0, compared to existing conditions. Because it would fail to meet the Proposed Action's stated purpose and need (see Section 1.1), the No-Build Alternative is not recommended.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

The following alternatives to the Proposed Action were considered but eliminated from detailed analysis because they would fail to meet the Proposed Action's purpose and need and/or proved to be impractical due to cost or land use constraints.

2.3.1 Maintain Bryn Mawr Substation

One alternative was similar to the Proposed Action, except instead of demolishing the existing Bryn Mawr Substation, a new traction power substation would be built elsewhere in Bryn Mawr. However, finding several acres of available land near Bryn Mawr adjacent to the Main Line and utilizing it for a traction power substation proved difficult. The surrounding area is densely developed and acquiring land for the substation construction would likely result in costly legal fees, possible public opposition, and displacement of existing building occupants. Amtrak owns the land used for a parking lot adjacent to the current Bryn Mawr Substation; however, using this land for a new substation would result in the loss of many well used commuter parking spaces.

2.3.2 Improve Former Pennsylvania Railroad Line

A second alternative considered but eliminated from detailed analysis involved replacing the catenary poles and incorporating new transmission lines on the former Pennsylvania Railroad rights-of-way (see Figure 2 in Section 1.2). This alternative would be much more costly to complete due to route length and would not resolve the accessibility issue for Amtrak maintenance crews.

2.3.3 Eliminate Electric Service

The third alternative considered but eliminated involved removing the deteriorated catenary structures and all catenary wires and transmission lines, and returning the railroad system to one that supports a diesel line. This alternative would result in a functionally obsolete system and would not result in the improvement of electric passenger train service for Amtrak and SEPTA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This EA focuses only on those resources that have a reasonable likelihood to be impacted by the Proposed Action. Navigable waterways, coastal zones, wetlands, farmlands, and critical habitats are not present within the Proposed Action area and are therefore not addressed in this document. The anticipated direct, indirect, and cumulative impacts of the Proposed Action to the resources present and evaluated in this EA are discussed in this chapter.

The No-Build Alternative would result in no change in environmental impacts to the resources described in this Section compared to existing conditions, so it is not discussed in each of the following sections. However, the No-Build Alternative involves risks, including a breakdown of the system and loss of service, as the catenary structures, catenary wires, and transmission lines are showing signs of substantial deterioration and frequently require extensive repairs. In turn, the frequent repairs increase safety risk for Amtrak's maintenance crews. The No-Build

Alternative would also affect projected increases in train traffic, as the spacing of traction power substations would remain unchanged and would limit the available power supply.

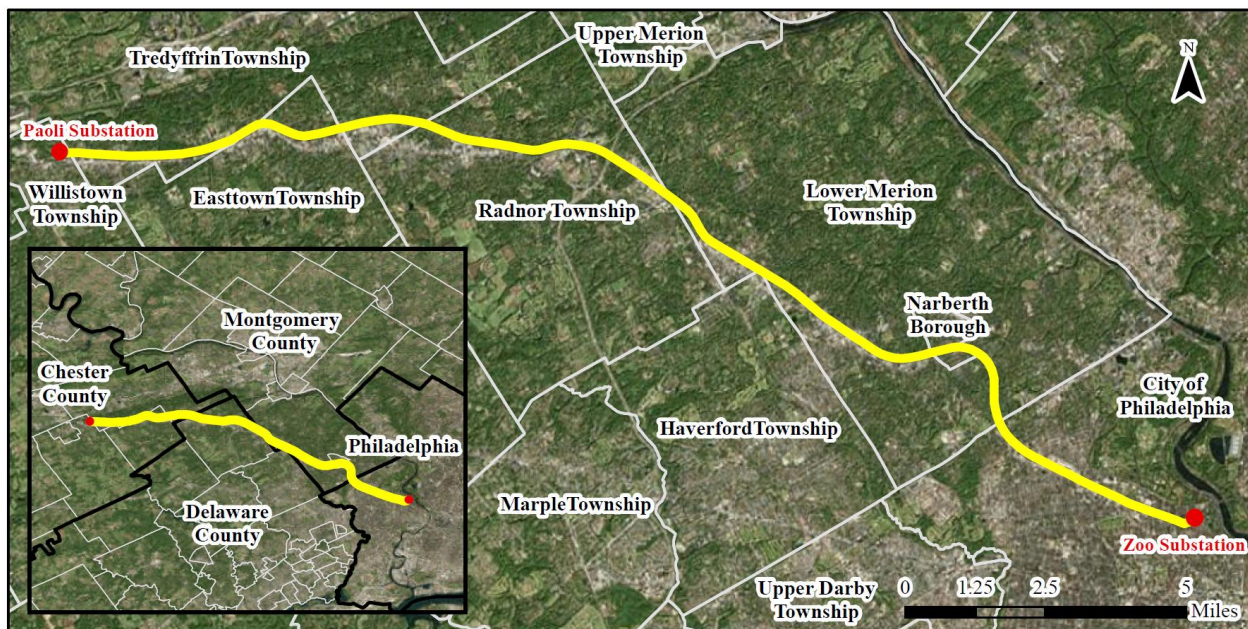
3.1 Location and Land Use

County and municipal maps, land use maps, United States Geological Survey (USGS) maps, aerial photographs, and on-line GIS mapping were consulted and reviewed. These maps were used to identify municipalities and characterize the setting within and surrounding the Proposed Action area. These maps were also used to identify the location of public facilities, parks, and wildlife refuges in or adjacent to Proposed Action area.

3.1.1 Affected Environment and Existing Conditions

The Proposed Action spans 18 miles along Amtrak’s right-of-way between the Philadelphia Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5). As shown in Figure 4, this route passes through the City of Philadelphia (Philadelphia County), Lower Merion Township (Montgomery County), Narberth Borough (Montgomery County), Haverford Township (Delaware County), Radnor Township (Delaware County), Tredyffrin Township (Chester County), Easttown Township (Chester County), and Willistown Township (Chester County).

Figure 4: Municipalities within the Proposed Action Route



The Proposed Action area passes through developed land consisting of urban and suburban uses. The majority of the surrounding land uses include residential and commercial properties, but several schools, universities, public parks, and one wildlife refuge can also be found adjacent to the Amtrak right-of-way. In some cases, these residences and other facilities are as close as 100 feet (unobstructed by buildings) from the Proposed Action area. Topographic maps are included

as Appendix A, and aerial photographs are included as Appendix B for more detail on land use within the Proposed Action area.

3.1.2 Environmental Consequences

The Proposed Action is located within an existing railroad corridor. Under the Proposed Action, all construction would occur in the existing Amtrak right-of-way. The Proposed Action does not require any right-of-way acquisitions, or changes to land use type or zoning. No impacts on land use or zoning are anticipated.

3.2 Cultural Resources

This subsection evaluates the Proposed Action's effects on historic, architectural, and archaeological resources. Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C § 306108), and implementing regulations codified in 36 CFR Part 800, as amended require Federal agencies to consider the effect of undertakings on resources that are listed or eligible for listing on the National Register of Historic Places. Because FRA has determined that if it provides financial assistance to construct the upgrades and replacements required under the Proposed Action, the Proposed Action would be an undertaking subject to Section 106, it authorized Amtrak to engage in the Section 106 consultation process, including identification of historic resources, assessment of adverse effects in consultation the Pennsylvania State Historic Preservation Officer (PA SHPO), and resolution of adverse effects with the PA SHPO and other consulting parties.

The Area of Potential Effects (APE) for archaeology was defined as the area in which the proposed construction activities may disturb existing soils and landforms and was contained within existing railroad right-of-way. The APE for historic resources was delineated to include properties for which there could be potential direct physical effects from the proposed construction work and also to include properties for which there could be potential indirect effects (primarily visual) on historic properties. Identification of resources within the APE was performed between 2011 and 2016, utilizing guidance from the Advisory Council on Historic Preservation (ACHP) set forth in 36 CFR Part 800, as amended, and Executive Order 11593. Following identification, the potential impacts of the Proposed Action on both archaeological and historic resources were investigated in consultation with the PA SHPO.

3.2.1 Participants

As described in 36 CFR § 800.2, participants in the Section 106 process may include the agency officials, the ACHP, Consulting Parties, and the public. Consulting Parties may include the PA SHPO; Indian tribes; representatives of local governments; and applicants for Federal assistance, permits, licenses, and other approvals. Additional Consulting Parties may include individuals and organizations with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties or their concern with the undertaking's effects on historic properties.

Representatives from 52 organizations (see Appendix D) were invited to participate as Consulting Parties in the Section 106 process and were sent eligibility, effects, and mitigation recommendations for review. Amtrak received and considered comments from the following 14 organizations:

- Historic Preservation Section, Delaware County Planning Department
- Haverford Township Historical Commission
- Lower Merion Township Historic Architectural Review Board (HARB)
- Lower Merion Township
- Wynnewood Civic Association
- Haverford Station Historic District Neighborhood Coalition
- Lower Merion Historical Society
- Preservation Alliance for Greater Philadelphia
- National Railway Historical Society - Philadelphia Chapter
- Railroad Museum of PA (RRMPA)
- Delaware Valley Association of Rail Passengers
- PA SHPO
- Tuscarora Nation
- Delaware Tribe of Indians

Coordination with federally recognized Native American tribes was initiated in April 2012 (Tuscarora Nation) and August 2015 (Absentee-Shawnee Tribe of Oklahoma, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Onondaga Nation, St. Regis Mohawk Tribe, Shawnee Tribe, and Stockbridge-Munsee Band of the Mohican Nation of Wisconsin) in order to begin Government-to-Government consultation on the Proposed Action. The purpose of the consultation was first to incorporate tribal concerns for locations of traditional or cultural significance into the cultural resource survey process and, second, to provide an opportunity for participation in the process of identifying cultural resources, effects of the Proposed Action on significant resources, and resolution of any adverse effects, which may result from the Proposed Action. The Tuscarora Nation and the Delaware Tribe of Indians asked to be included on the Consulting Parties distribution list, and the Delaware Tribe of Indians asked to receive copies of the cultural resources reports, but did not provide any comments on the Proposed Action. The Tribal Consultation letters are included in Appendix D.

Coordination with Consulting Parties is summarized in Section 5.2 and is detailed in the *Determination of Effects Report* (August 2015). Section 106 Consulting Parties meetings were

held in June 2013, September 2014, June 2015, and September 2015. Coordination with the Consulting Parties occurred throughout the Proposed Action development to obtain input and comments on the APE, the historic resource identification, effects determinations, and possible minimization and mitigation measures of the adverse effect of the Proposed Action on historic properties.

3.2.2 Archaeology

In 2012, a Phase IA geomorphology and archaeology reconnaissance survey was completed for the Proposed Action, the results of which are presented in the *Phase IA Geomorphology / Archaeology Reconnaissance Report* (November 21, 2012). The survey included background research and a field survey of the entire APE for archaeology to determine the probabilities for the presence of intact, significant historic and pre-contact archaeological resources that might be adversely impacted by the Proposed Action construction. The APE for archaeology was defined as the area in which the proposed construction activities may disturb existing soils and landforms and was contained within existing railroad right-of-way.

3.2.2.1 Affected Environment

One previously recorded historic archaeological site noted as adjacent to the existing Proposed Action right-of-way was field checked and determined to be located entirely outside the current APE. No other areas suitable for subsurface testing were found within the APE for archaeology.

3.2.2.2 Environmental Consequences

Based on the above analysis, the Proposed Action, as currently designed, would not impact any known National Register of Historic Places (NRHP) -listed or -eligible archaeological properties. The PA SHPO concurred with this finding in a letter dated January 15, 2013 (see Appendix D). Subsequent design changes for the Bryn Mawr Substation demolition and new Bryn Mawr Substation construction prompted additional archaeological investigation and submission of findings to PA SHPO of no additional work required. The PA SHPO concurred with this finding in a letter dated January 7, 2016.

Additionally, an Unanticipated Discoveries Plan has been prepared for the Proposed Action and is appended to the Draft Memorandum of Agreement (MOA) (see Appendix D). The Unanticipated Discoveries Plan stipulates that in the event that unanticipated archaeological resources are encountered during construction, Amtrak shall cease work in the affected area and PA SHPO and FRA would be notified immediately. The discovery of human remains requires notification of the coroner and PA SHPO, and FRA would determine when it is appropriate to notify Native American groups.

Cultural resources correspondence is included as Appendix D.

3.2.3 Historic Resources

In order to assess the impact of the Proposed Action on historic properties, a historic resource APE for historic architectural resources was defined in consultation with the PA SHPO and Consulting Parties. The APE was delineated to include properties for which there could be potential direct physical effects from the proposed construction work. The APE also accounted for potential indirect effects on historic properties; potential indirect effects are primarily visual due to the increased heights of the new catenary structures and the tree trimming that would be performed in certain areas at the edge of the right-of-way for the new catenary structure installation.

PA SHPO's Cultural Resources Geographic Information System (CRGIS) was consulted in order to identify previously recorded historic properties - those that are eligible for listing or are already listed in the NRHP within the historic resources APE. A survey of the historic resources APE was conducted to confirm or refute the presence of the previously surveyed resources and to identify additional resources in the APE that could potentially be eligible for listing in the NRHP.

3.2.3.1 Affected Environment

According to PA SHPO's CRGIS, there were 26 previously recorded resources identified as NRHP-eligible or NRHP-listed within the APE. Five additional resources were surveyed and evaluated for NRHP eligibility in the *Historic Resources Study/Determination of Eligibility Report* (February 2015). The report recommended two resources – the Clonmel-Rosslevyn Residence and the Devereux Foundation - as eligible for listing in the NRHP. The PA SHPO concurred that these two additional resources are eligible for the NRHP either individually or as contributing resources on March 16, 2015 and April 24, 2015 (see Appendix D).

Subsequent to these studies, it was discovered that one of the 28 historic properties, the Villanova Station, was only determined NRHP-eligible as a contributing resource to the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg), not as an individual resource. Therefore, only 27 individually NRHP-eligible or -listed resources are located within the APE.

As shown in Table 1, 27 historic resources within the historic resource APE are listed on or individually eligible for the NRHP. Cultural resources mapping and correspondence are included as Appendix D.

Status	Resource	Status	Resource
Listed	Fairmount Park Historic District	Eligible	Radnor Station
Eligible	40th Street Bridge over Amtrak	Eligible	Louella Court Historic District
Eligible	42nd Street Bridge over Amtrak	Listed	Wayne Station

Table 1: NRHP-Eligible and NRHP-Listed Resources in the APE			
Status	Resource	Status	Resource
Listed	Parkside Historic District	Listed	North Wayne Historic District
Eligible	Belmont Avenue Historic District	Listed	Downtown Wayne Historic District
Listed	Overbrook Farms Historic District (incl. Overbrook Station)	Listed	Strafford Station
Eligible	SR 1 Bridge over Amtrak	Listed	Cramond
Eligible	Merion Station	Eligible	Grove Avenue Service Station
Eligible	Wynnewood Station	Eligible	Pennsylvania Railroad (Philadelphia to Morrisville/New York)
Eligible	Ardmore Commercial Historic District	Eligible	Pennsylvania Railroad (Philadelphia to Harrisburg)
Eligible	Haverford Station	Eligible	The Philadelphia & Western Railroad (Norristown High Speed Line)
Eligible	Our Mother of Good Counsel Roman Catholic Church	Eligible	William Penn Mile Markers (only Ardmore marker out of 12 total is within the APE)
Eligible	Villanova University Campus	Eligible	Devereux Foundation
Eligible	Clonmel-Rosslevyn Residence		

3.2.3.2 Environmental Consequences

According to the regulations set forth in 36 CFR Part 800, because historic properties are located within the APE for the undertaking, it is necessary to assess whether the undertaking may affect these properties. Historic resource effect findings can be categorized as No Historic Properties Affected, No Adverse Effect, or Adverse Effect. If the agency official finds that there are no historic properties present in the APE or if there are historic properties present but the undertaking will have no effect on them, a finding of No Historic Properties Affected will be made.

If it is found that the undertaking may affect historic properties in the APE, the Criteria of Adverse Effect are applied. An Adverse Effect is found when an undertaking may alter, either directly or indirectly, the characteristics of a historic property that qualify it for inclusion in or eligibility for the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The initial effects analysis to the 2014 Historic Resources Study, resulted in a finding of Adverse Effect because of the Proposed Action's direct physical effects to the NRHP-eligible Pennsylvania Railroad Main Line (Philadelphia to Harrisburg), due to the removal and replacement of catenary structures with taller structures and the demolition of the Bryn Mawr Substation (both of which are contributing resources to the Pennsylvania Railroad Main Line).

As part of the public involvement meetings during the design process, Amtrak reduced the catenary structures heights and prepared a tree trimming plan to be implemented prior to construction of the Proposed Action. The *Determination of Effects Report* for the refined Proposed Action resulted in a finding of:

- No Historic Properties Affected for 16 historic properties
- No Adverse Effect on 10 historic properties
- Adverse Effect on 1 historic property

An assessment of the Proposed Action's indirect visual effects on each identified resource in the APE resulted in the finding that none of the potential visual impacts, including the introduction of the increased catenary structure heights and the limited tree trimming, would adversely affect the characteristics that qualify the resources for listing in the NRHP. The railroad infrastructure, including its catenary system, has historically been an integral component of the railroad system and its overall physical setting. Furthermore, the nineteenth- and early twentieth-century siting and construction of the historic properties in the railroad's immediate vicinity were a direct result of the railroad's presence. The properties have historically had the railroad and its accompanying infrastructure within their view. Thus, the presence of new catenary structures, including the height addition, would not present an adverse effect.

The finding of adverse effect on one historic property is a result of the direct physical effects of the Proposed Action to the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) due to the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation, both of which are contributing resources to the Pennsylvania Railroad Main Line.

Amtrak has incorporated Consulting Party feedback into the Proposed Action to minimize effects, including keeping the height of the new catenary structures as low as possible while meeting electrical code requirements, locating new catenary structures near the existing ones, and producing tree trimming plans to indicate locations where overhanging tree limbs within the right-of-way would be trimmed to enable catenary structure replacement.

Measures to mitigate the adverse effects of the Proposed Action have been identified at the Section 106 Consulting Parties meetings, and the agreed upon mitigation measures for the Proposed Action are included in a Draft MOA between FRA, Amtrak, RRMPA, SEPTA, and the PA SHPO. RRMPA and SEPTA participated in the consultation and have been invited to be signatories to the MOA, because they will be responsible for executing portions of the mitigation stipulations (see Section 3.2.4).

On October 8, 2015, the PA SHPO concurred with these effects determinations and stated that there has been adequate consultation with the PA SHPO and the Consulting Parties regarding ways to avoid, minimize, or mitigate effects on historic properties.

An Addendum to the 2015 *Determination of Effects Report* was submitted to the PA SHPO on June 17, 2016, to address the potential effect of the re-design of certain catenary poles to avoid trimming vegetation outside of Amtrak right-of-way. On July 19, 2016, the PA SHPO further concurred that the proposed design revisions (tree trimming plan and 10' to 15' increase in some catenary pole heights) would not adversely affect any other historic properties within the APE. Cultural resources correspondence is included in Appendix D.

3.2.4 Draft Memorandum of Agreement

FRA, Amtrak, RRMPA, SEPTA, and the PA SHPO have drafted an MOA to memorialize the agreed upon mitigation measures to address the potential adverse effect of the Proposed Action on the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) and its contributing resources. The Draft MOA includes commitments regarding documentation, interpretation, and design. Documentation and interpretation commitments include:

- Recordation of the Bryn Mawr Substation and related catenary system;
- Provision of an interpretive sign inside the SEPTA-leased Bryn Mawr Station that focuses on the history of the PA Railroad Main Line;
- Donation of elements of the catenary system that are removed from the Bryn Mawr Substation to RRMPA, with an accompanying conservation allowance; and
- Provision of an opportunity for RRMPA to conduct oral history interviews of current or former Amtrak Electric Traction Department employees.

Design commitments include:

- Designing the new Bryn Mawr Substation to be consistent with the materials, color, and texture of the existing substation, without mimicking the historic building;
- Incorporating the existing Bryn Mawr Substation sign into a landscape feature in the vicinity of the new substation site design; and
- Offering the bricks from the historic substation building for salvage by Consulting Parties and/or the public.

The Draft MOA also references an Unanticipated Discoveries Plan, which has been prepared for the Proposed Action. The Unanticipated Discoveries Plan stipulates that in the event that unanticipated archaeological resources are encountered during construction, Amtrak shall cease work in the affected area and PA SHPO and FRA would be notified immediately. The discovery of human remains requires notification of the coroner and PA SHPO, and FRA would determine when it is appropriate to notify Native American groups.

Following distribution on August 17, 2015, Consulting Parties had 30 days to review and comment on the Draft MOA. Comments were received prior to and during the September 2015 Section 106 Consulting Parties meeting. The Draft MOA's stipulations for minimization, mitigation, and design measures would minimize impacts and mitigate the adverse effect of the

Proposed Action. The Draft MOA, last revised on February 24, 2017, is included in Appendix D. Additional comments can be made on the Draft MOA during the 30 day public review period for this Environmental Assessment.

3.3 Parks and Wildlife Refuges

County and municipal maps, land use maps, USGS maps, aerial photographs, and on-line GIS mapping were consulted and reviewed. These maps were used to identify the location of parks and wildlife refuges in or adjacent to Proposed Action area.

3.3.1 Affected Environment

There are three publicly-owned parks and one publicly-owned wildlife refuge located adjacent to the Proposed Action area, as mapped in Appendix B.

The Merion Botanical Park (Appendix B - aerial photograph sheet 4, Mile Post 5.8) is an 11.6 acre park located in Lower Merion Township, Montgomery County. The park was created in 1944 adjacent to the Pennsylvania Railroad Mainline and includes paths, a stream with footbridge, benches, and numerous species of plants native to the area. The Botanical Society donated the park land to the Township in exchange for a maintenance arrangement, stipulating that general maintenance is performed by the Township of Lower Merion while care and replacement of the botanical collection is completed by the Botanical Society of Lower Merion. Deed restrictions limit the type of development that is possible in the park, with requirements that the property be forever kept as a botanical garden and public park but not include playground equipment or sports fields. In addition to the land owned by the Township (10.2 acres), a strip of land adjacent to the rail line (1.4 acres) is leased by the Township from Amtrak; under the Proposed Action there would be tree trimming in this area but no construction stockpiles. The Merion Botanical Park is referenced in *The Greater & Greener Plan 2012-2021: Parks & Recreation Plan Update* (2012) and is further detailed in *Merion Botanical Park: Master Plan* (September 2014).

Narberth Playground (Appendix B - aerial photograph sheet 5, Mile Post 7.1) is the largest public park (5.5 acres) in Narberth Borough, Montgomery County. This park includes a multipurpose field, two basketball courts, three tennis courts, playground equipment, benches, picnic tables, a gazebo, and a field house with snack bar and restrooms. The park is also programmed with youth sports leagues and community events, such as summer concerts. According to *An Open Space Master Plan for Narberth* (2006), the park was created in the 1920s and remains under Borough ownership and management.

The Sharpe Park and Bird Sanctuary (Appendix B - aerial photograph sheet 7, Mile Post 9.2) is located in Lower Merion Township, Montgomery County and is owned by Lower Merion Township. At 2.3 acres, the wildlife refuge is classified as a “mini” park type in *The Greater & Greener Plan 2012-2021: Parks & Recreation Plan Update* (2012). Sharpe Park and Bird Sanctuary includes paths, benches, and a picnic table. Sharpe Park and Bird Sanctuary also hosts

community events such as “Twilight in the Park” (food, entertainment, prize drawings), “Art in Sharpe Park” (food, artists, craftsmen), and Easter egg hunts. Sharpe Park has been designated as an Audubon Society “Bird Town” and is considered a wildlife refuge. Bird Town is a working partnership of Audubon Society and municipalities to promote conservation and community-based actions to create a healthy, more sustainable environment for birds and people by making more ecologically-friendly decisions and conserving energy. A Bird Town makes efforts to restore valuable ecosystem services to create a culture of conservation where everyone is a potential steward of nature in their backyard and beyond.

North Wayne Park (Appendix B - aerial photograph sheet 12, Mile Post 14.7) is a 4.6 acre park owned by Radnor Township School District, leased by Radnor Township (Delaware County) for \$1 a year, and open to the public. It is also known as Seneca Egbert Field and Merryvale Park and includes a multipurpose field, a baseball field, and a playground. North Wayne Park is referenced but not detailed in the *Radnor Township Comprehensive Plan* (2003).

3.3.2 Environmental Consequences

Since all construction would occur within existing Amtrak right-of-way under the Proposed Action, there would be no direct impacts to any of these publicly-owned parks and wildlife refuge. The Proposed Action would not convert these publicly-owned parks and wildlife refuge to a transportation use.

Section 6(f) of the Land and Water Conservation Act of 1965 regulates the direct conversion of recreational facilities purchased or improved through 6(f) funding. None of these four facilities are listed in the National Park Service’s Land & Water Conservation Fund (LWCF) project list or are included in the PA Department of Conservation and Natural Resources (PA DCNR) LWCF mapping. The Proposed Action would not convert any Section 6(f) properties to a non-recreational use; therefore there is no impact to Section 6(f) properties.

Section 4(f) of the U.S. Department of Transportation Act of 1966 also regulates the use of publicly-owned parks and wildlife refuges. Uses can result from permanent incorporation, temporary occupancy, or proximity impacts so severe that the protected activities, features, or attributes of the property are substantially impaired (the latter is referred to as a “constructive use”). No park or wildlife refuge would be permanently or temporarily occupied as part of the Proposed Action. Construction information is detailed in Section 3.17 and explains that construction activities at any given location on the rail line would last for several days or nights, would generate minimal airborne dust, and would not include blasting. None of these parks and wildlife refuge are near the Bryn Mawr Substation (see Appendix B), where construction would be longer and more intensive. Therefore, proximity impacts to the parks and wildlife refuge during construction would not be so severe that the protected activities, features, or attributes of the property are substantially impaired. Long-term visual impacts to the parks and the wildlife refuge caused by the installation of taller catenary structures and tree trimming are described in Section 3.12 and, after taking into account measures to minimize and mitigate harm, would not

be so severe that the protected activities, features, or attributes of the property would be substantially impaired. Also, the Proposed Action does not involve any changes in rail service, such as speed or number of trains, so there would be no potential constructive use based on service. In summary, there would be no temporary or permanent use of the public parks or the public wildlife refuge resulting from permanent incorporation, temporary occupancy, or proximity impacts so severe that the protected activities, features, or attributes of the property would be substantially impaired. No impacts to the parks and the wildlife refuge are anticipated. Refer to Section 4 for the Draft Section 4(f) Evaluation.

3.4 Transportation

3.4.1 Affected Environment

The Proposed Action area is comprised of an 18 mile long section of Amtrak's Keystone Corridor East and SEPTA's Paoli/Thorndale Regional Rail Line. The rail line contains 15 SEPTA stations, one Amtrak station, and one joint SEPTA-Amtrak station. Currently, the Bryn Mawr Station is not a stop for Amtrak, but is a stop on SEPTA's Paoli/Thorndale Regional Rail Line. According to SEPTA's website, the Bryn Mawr Station has 46 daily parking spaces (full), 153 monthly permit spaces (full), and 55 spaces in the Lower Merion Municipal Parking Lot (not full, 45 available). All three lots are paid parking.

3.4.2 Environmental Consequences

Replacement of the Bryn Mawr Substation, located approximately 500 feet southeast of the Bryn Mawr Station on Amtrak property, under the Proposed Action would permanently impact 12 parking spaces within the lot that Amtrak leases to SEPTA.

Avoidance is not feasible, because the existing substation is obsolete and must be replaced, and alternative locations to construct a new traction power substation proved impractical. The surrounding area is densely developed and acquiring several acres of land adjacent to the Main Line for the substation construction would likely result in costly legal fees, possible public opposition, and displacement of existing building occupants. Amtrak owns the land used for a parking lot adjacent to the current Bryn Mawr Substation; however, using all of this land for a new substation would result in the loss of many well used commuter parking spaces. As avoidance is not feasible, the impact is being minimized by designing the substation to have the smallest possible footprint without losing its intended functionality. While this compact substation design would result in higher construction costs, it would minimize the number of permanently lost parking spaces from 36 to 12. The plan is included as Appendix C, drawing ET-0117 of the Paoli to Bryn Mawr plans.

Rail service would also be impacted, because the Proposed Action would provide a more reliable energy supply while also upgrading traction power. While this would improve existing rail service, the Proposed Action would not include an increase in the speed or frequency of trains.

Transportation impacts during construction are discussed in Section 3.17.

The impacts to parking and rail service are considered minor. No impacts to bus, bicycle, or pedestrian access and use are anticipated, including at the Bryn Mawr Station parking lot.

3.5 Noise and Vibration

Noise and vibration impact assessment was conducted following FRA policy. It is FRA policy to use the Federal Transit Administration's *Transit Noise and Vibration Impact Assessment* manual for conventional rail noise and vibration impact assessments and to use the FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* manual for projects with train speeds of 90-250 mph. According to Amtrak's track charts, the maximum allowable speed between Mile Post 2.5 and Mile Post 20.2 varies between 30 mph and 80 mph. The maximum allowable speed between Mile Post 20.2 and 20.5 is 90 mph. Accordingly, the noise and vibration assessment used both manuals to examine the potential impacts that the Proposed Action may have on sensitive noise and vibration receptors.

3.5.1 Affected Environment

Based on a review of USGS maps and aerial photographs, sensitive receptors (such as residences, parks, one wildlife refuge, churches, and schools) are present adjacent to the rail corridor along much of the Proposed Action area. Some sensitive receptors are as close as 100 feet (unobstructed by buildings) to the Proposed Action area.

3.5.2 Environmental Consequences

Under the Proposed Action, maximum allowable train speeds would not be increased, type of train would not be changed, and the rail lines would not be shifted. The proposed upgrades to the electrification system, all within the existing Amtrak right-of-way, would not affect rail traffic noise and/or vibration levels throughout the Proposed Action area. Short-term noise and/or vibration levels that may occur during construction are discussed in more detail in Section 3.17.

The Proposed Action would not change train speed, alter rail line alignments, nor change the type of train. Therefore, the Proposed Action would not have any noise and vibration impacts.

3.6 Electric/Magnetic Fields

An electromagnetic field is an invisible area of energy produced by electrically charged objects. An electromagnetic field is a combination of an electric field produced by stationary charges and a magnetic field produced by moving charges, also called currents. Electric fields are easily shielded or weakened by walls or other objects, while magnetic fields can pass through most materials. The strength of both electric fields and magnetic fields decreases rapidly with increasing distance from its source. Electromagnetic fields are found near power lines, electrical wiring, and electrical appliances (refrigerators, vacuums, etc.). Electromagnetic interference (often called radio noise) is a disturbance generated by an external source that degrades performance of an electrical, magnetic, or electromagnetic device. Electromagnetic interference can be caused by sources such as automobile ignition systems, cell phones, thunderstorms, and

the sun. To evaluate electric and magnetic field impacts associated with the Proposed Action, AECOM Energy produced a “Report on Electric, Magnetic Fields and Radio Noise Along the Zoo-Paoli Rail Line” (October 21, 2011), in association with Burns Engineering. This study is included as Appendix E.

3.6.1 Affected Environment

As part of the electric and magnetic field study, base line, field measurements were conducted to document the existing magnetic and electric fields along the Proposed Action corridor. This line is currently configured with a four track, 12 kV, 25 Hz, catenary system. In existing conditions, the mean magnetic field (at 25 Hz) is 24 mG and the mean electric field (at 25 Hz) is 500 V/m, as measured on train station platforms along the Proposed Action corridor.

Land uses with sensitivity to electric and magnetic fields are present along the Proposed Action corridor. Residences are present adjacent to the rail corridor along much of the Proposed Action area, some as close as 100 feet (unobstructed by buildings) to the Proposed Action area. Google Earth indicates that facilities with medical equipment are also located in the vicinity of the Proposed Action area, such as Centennial Healthcare (Mile Post 3.2), PHA Pediatrics (Mile Post 5.3), Bryn Mawr Medical (Mile Post 7.9), Main Line Allergy (Mile Post 8.0), NovaCare Ardmore (Mile Post 8.0), Dentistry at Suburban Square (Mile Post 8.5), Louis P. Bucky, MD (Mile Post 8.9), Penn Dental Center at Bryn Mawr (Mile Post 10.0), Cardiology Consultants Bryn Mawr (Mile Post 10.2), Golden LivingCenter Rosemont (Mile Post 10.8), Radnor Veterinary Hospital (Mile Post 14.2), Mainline OB/GYN (Mile Post 15.4), Daniel Rubino, MD (Mile Post 15.9), Devon Dental Arts (Mile Post 16.1), Devon Veterinary Hospital (Mile Post 16.3), Ufberg Dental (Mile Post 17.6), Wilkes & Bittenbaum Orthodontics (Mile Post 18.8), Paoli Vetcare (Mile Post 18.8), MinuteClinic (Mile Post 19.3), and Amsterdam Dental Group (Mile Post 19.4).

3.6.2 Environmental Consequences

Pennsylvania requires that transmission lines be built in accordance with the requirements of the National Electrical Safety Code, which cites no restrictions for electric or magnetic fields; the Federal government also has no national standard in this regard. In the absence of established criteria standards for electric and magnetic fields generated by electric facilities, the latest guidance document from the International Commission on Non-Ionizing Radiation Protection was referenced.

Based on a comprehensive review of the available scientific and medical literature, the study concluded that the fields expected from the Proposed Action would be below any level that is of concern (see Table 2). These fields are small by comparison to utility transmission lines where the right-of-way magnetic fields are an order of magnitude larger and the electric fields are two orders of magnitude larger than what is anticipated adjacent to the tracks through the Proposed Action area. Table 2 summarizes the findings of the study.

Table 2: Electric and Magnetic Fields			
Field	Existing Level	Proposed Level	Level Warranting Concern
Electric	500 V/m (at 25 Hz)	804 V/m (at 25 Hz)	10,000 V/m (at 25-60 Hz)
Magnetic	24 mG (at 25 Hz)	65 mG (at 25 Hz)	2,000 mG (at 25-60 Hz)

Changes in electromagnetic interference were also modeled as part of the attached study and were found to be well below levels that interfere with standard radio services, both in dry and wet weather.

Therefore, the Proposed Action would have minor impacts on the electric field, the magnetic field, and electromagnetic interference.

3.7 Air Quality

The Clean Air Act of 1990 gives the federal government the authority to implement and enforce regulations intended to reduce air pollutant emissions nationwide. Under the Clean Air Act, the U.S. Environmental Protection Agency (U.S. EPA) sets standards for six common air pollutants called criteria pollutants. The criteria pollutants include particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead, which can harm human health, the environment, and property. The limits set by the U.S. EPA for the criteria pollutants are known as National Ambient Air Quality Standards (NAAQS). Locations that persistently exceed the NAAQS may be designated as nonattainment, while those that meet the NAAQS may be designated as attainment. Maintenance areas are those that had a history of nonattainment but are now consistently meeting the NAAQS and have a maintenance plan in place.

The U.S. EPA promulgated the General Conformity Regulations in 1993 in order to implement Section 176(c) of the Clean Air Act. The purpose of the General Conformity Rule is to ensure that federally supported or approved activities do not cause or contribute to a new violation of the NAAQS, worsen an existing violation, or delay attainment of the NAAQS. General conformity de minimis levels, the minimum thresholds for which a conformity determination must be performed, are identified in 40 CFR § 93.153(b).

3.7.1 Affected Environment

All counties within the Proposed Action area are in attainment for all criteria pollutants, with the following exceptions:

- Non-attainment areas
 - Particulate matter (PM-2.5) (Delaware County)
 - Ozone (Philadelphia, Montgomery, Delaware, and Chester counties)

- Maintenance areas
 - Carbon monoxide (Philadelphia County)

Activities that currently contribute to emissions in the four counties within the Proposed Action area include traffic and industry.

3.7.2 Environmental Consequences

No impacts to air quality are anticipated from operation of the new Bryn Mawr Substation and new transmission lines or from the replacement of deteriorated catenary structures within existing Amtrak right-of-way. Air quality impacts during construction are discussed in Section 3.17.

3.8 Hazardous Materials and Waste

Hazardous Materials and Waste assessment was conducted by utilizing the PA Department of Environmental Protection (PADEP) eMapPA tool to search for land recycling cleanup locations, mine drainage treatment land recycling projects, and U.S. EPA Toxic Release Inventory sites in the Proposed Action area. Additionally, a senior environmental manager at Amtrak answered questions regarding known hazardous waste sites in the immediate vicinity (Paoli Railyard Superfund site), the most likely soil contaminants that could potentially exist within the Proposed Action area, and Amtrak's procedures for working with old electrical transformers.

3.8.1 Affected Environment

The Proposed Action would involve the use or handling of hazardous materials. Old electrical transformers, which may contain polychlorinated biphenyl (PCB) oil, would be removed and replaced as part of the Proposed Action. Amtrak has established procedures for testing and draining transformers prior to disposal. Amtrak also maintains contracts with multiple firms for emergency response and waste hauling services. These firms have experience with and are qualified to handle PCB containing electrical equipment safely. They would follow all state and federal regulations regarding safe handling and disposal procedures.

The area near the Paoli Substation is part of the Paoli Railyard Superfund site. If Amtrak chooses to use this site for a construction stockpile/staging area, then Amtrak would need to coordinate with U.S. EPA and to follow their restrictions. As a precaution in case hazardous waste is encountered at any location within the Proposed Action area during construction, a Soil Management Plan has been provided (Appendix F). The Soil Management Plan specifies waste management procedures and precautions for construction in areas of environmental concern within the construction zone.

Contamination from adjacent land uses, such as the current residential and commercial uses, has not been identified. The most likely soil contaminant onsite may be PCB oil in the area of the transformers, and the PCB oil may be encountered during excavation of the catenary structures. Elevated levels of volatile organic compounds and semi-volatile organic compounds present in

native soil and elevated levels of metals and semi-volatile organic compounds associated with historic urban fill material (slag, cinders, brick, etc.) could also be encountered during excavation for construction. Petroleum Hydrocarbons, Poly Aromatic Hydrocarbons and metals could also be present from coal ash that was often used as fill in the past.

3.8.2 Environmental Consequences

Amtrak has established procedures for testing and draining transformers prior to disposal, maintains contracts with multiple firms for emergency response and waste hauling services, and has created a Soil Management Plan in case contaminated soil is encountered during construction. There would be no property acquired for the Proposed Action, so there would be no transfer of risk to Amtrak. Therefore, it is anticipated that the Proposed Action would not result in any impacts from hazardous materials or wastes.

Any areas of environmental concern encountered during construction require special waste management practices, health and safety considerations, and/or precautions during construction. Soil materials excavated from these areas of environmental concern would require special handling and on-site management. Procedures for managing excavated soil within these areas of concern are detailed in the Soil Management Plan.

3.9 Property Acquisitions and Easements

3.9.1 Affected Environment

The majority of the surrounding land uses consist of residential and commercial properties, but several schools, universities, public parks, and one wildlife refuge can also be found directly adjacent to the Amtrak right-of-way. More details on land use can be found in Section 3.1 Location and Land Use.

3.9.2 Environmental Consequences

The Proposed Action would not require permanent property acquisition or temporary construction easements (see Section 3.17).

3.10 Communities

3.10.1 Affected Environment

The municipalities and communities within the Proposed Action area are shown in Figure 3 (Section 1.3) and Figure 4 (Section 3.1), as well as in the attached aerial photographs (Appendix B). The Proposed Action area passes through developed land consisting of urban and suburban uses. Most of the surrounding land uses include residential and commercial properties, but several schools, universities, public parks, and one wildlife refuge are next to the Amtrak right-of-way. In some cases, these residences and other facilities are as close as 100 feet (unobstructed by buildings) from the Proposed Action area.

3.10.2 Environmental Consequences

No major impacts to communities are anticipated from the Proposed Action due to noise and vibration (Section 3.5), electric/magnetic fields (Section 3.6); or relocation of businesses or individuals (Section 3.9). See Section 3.12 for a discussion of minor visual impacts to adjacent communities.

Community impacts were also considered in terms of the potential for destruction or disruption of community cohesion, economic vitality, and the availability of public or private facilities or services. Community cohesion refers to the degree of interaction among the individuals, groups, and institutions that make up the community and the degree to which residents have a sense of belonging to their neighborhood. Since no property acquisition or changes in vehicular or pedestrian access would occur, the Proposed Action would not displace or segment any communities and therefore would not affect community cohesion. Businesses would not be displaced and transit-oriented development could potentially increase as an indirect impact of the Proposed Action (Section 3.18), which could potentially improve economic vitality for communities with train stations in the Proposed Action area. No impacts on communities, land use, or zoning are anticipated.

3.11 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994), requires federal agencies to incorporate consideration of environmental justice into their planning processes. The executive order prohibits federal financial assistance for programs and activities that use criteria, methods, or practices that discriminate based on race, color, or national origin and requires all federal agencies to “develop an agency-wide environmental justice strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

In order to satisfy federal environmental justice requirements, the Proposed Action was designed to avoid disproportionately high and adverse human health and environmental effects, including social and economic effects on minority and low income populations. Communication and outreach about the Proposed Action was designed to ensure full and fair participation by all potentially affected communities in the transportation decision making process and to prevent the denial of, reduction in, or delay in the receipt of benefits by minority and low-income populations.

The U.S. Department of Transportation’s Updated Environmental Justice Order 5610.2(a), dated May 2, 2012, states that the term “minority” includes American Indian and Alaskan Native, Asian American, Black, Hispanic or Latino, and Native Hawaiian and Other Pacific Islander persons. The Order states that a “low-income” designation is applicable for a person whose median household income is at or below poverty guidelines. The Order defines a

“disproportionally high and adverse effect on minority and low-income populations” as “an adverse effect that: (1) is predominately borne by a minority population and/or a low-income population, or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.”

3.11.1 Affected Environment

The U.S. EPA’s NEPAassist website was used to analyze the populations within 1/8 mile to either side of the 18 mile long Proposed Action corridor, using U.S. Census Bureau data from the 2010 American Community Survey (the latest available data set in NEPAassist). Within this 1/8 mile buffer, there are census block groups ranging in composition from 0 to 100% minority populations. Most of the Proposed Action area west of Merion Station (see Figure 3 and Appendix A, sheet 2) crosses through census block groups with minorities representing 10-20% of the total population. Moving east of Merion Station and into the City of Philadelphia, the percentage of minorities present increases to comprise 40-100% of the total population. The poverty data illustrates a similar divide at Merion Station. Nearly all of the Proposed Action area west of Merion Station crosses through census tracts with poverty rates of 0-10%. Moving east of Merion Station and into the City of Philadelphia, the poverty rate increases to 10-100%. As a basis of comparison, minorities comprise 17.1% of the total population of Pennsylvania, and 8.5% of families in Pennsylvania have income below the poverty level, according to the 2010 American Community Survey.

3.11.2 Environmental Consequences

The Proposed Action would cross through areas with above-average levels of minority and low income populations. However, there would be no disproportionately high impacts to minority or low-income populations, because all populations along the Proposed Action corridor would experience similar impacts (primarily minor, visual impacts). Likewise, there would be no variances in the receipt of benefits across populations, as all Amtrak and SEPTA users would benefit equally from the Proposed Action. Outreach efforts for all affected populations are detailed in Section 5.2. No negative impacts on environmental justice populations are anticipated.

3.12 Visual

The Proposed Action area passes through developed land consisting of urban and suburban uses. The majority of the surrounding land uses include residential and commercial properties, but several schools, universities, public parks, and one wildlife refuge can also be found adjacent to the Amtrak right-of-way. The buildings in the vicinity of the Bryn Mawr Substation appear to be commercial use. Aerial photographs are included as Appendix B.

Visual impacts caused by the taller catenary poles, by tree trimming, and by the replacement of the Bryn Mawr Substation were identified as concerns during the public involvement process.

These visual impacts are described below. Related mitigation and environmental commitments associated with visual impacts are detailed in Section 3.20 and Section 6.0, respectively.

3.12.1 Affected Environment

3.12.1.1 Catenary Poles

The majority of the existing catenary poles are approximately 45 to 55 feet in height and are painted a shade of green that looks like weathered copper; the paint is aging, faded, and failing, with many poles having patches of exposed rusted steel. The poles are spaced at a distance of 150 feet to 300 feet apart, depending on track curvature.

3.12.1.2 Trees

As evident in aerial photographs (Appendix B) and in Google Earth, trees line a majority of the Proposed Action corridor. Trees currently act as screens, to some extent, to shield each of the three parks and one wildlife refuge, as well as many residences and some businesses from the rail line and catenary structures.

3.12.1.3 Historic Resources

Refer to Section 3.2.3.1 for a description of the historic resources within the APE of the Proposed Action.

3.12.1.4 Residences, Parks, and Wildlife Refuge

Refer to Section 3.10.1 and Section 3.3.1 for a description of the existing residences, parks, and wildlife refuge in the vicinity of the Proposed Action.

3.12.2 Environmental Consequences

3.12.2.1 Catenary Poles

The majority of the proposed new catenary poles would be between 60 and 75 feet high. An increase in catenary pole height is necessary to accommodate the new Amtrak transmission line and meet Amtrak and National Electric Safety Code required clearances. The catenary structures at overhead bridges would require an increased height, ranging between 82 feet and 95 feet, in order to meet the mandatory distances between structures and power sources provided in the National Electric Safety Code. The proposed catenary structure height is higher than the current catenary structures, but much lower than many cell towers that exist today, and has been kept as short as possible at each location. Amtrak has minimized visual effects by removing proposed PECO commercial transmission lines from the design in order to minimize catenary structure heights. In accordance with Amtrak's typical practice, the new structures (steel I-beams) would have a galvanized zinc coating to retain their grey color and prevent rusting. Use of paint was considered but would fail in approximately two to five years on galvanized finish and in approximately five to ten years on bare steel. All new catenary poles would be constructed within the railroad right-of-way, typically within ten feet of the existing structures. Detailed construction plans for the poles and associated structures are included as Appendix C, with a

comparison of the existing and proposed catenary structures on drawings ET-0042 to ET-0043 of the Paoli to Bryn Mawr plans. Proposed catenary structure heights at specific locations along the Proposed Action corridor are shown in the Appendix D mapping.

3.12.2.2 Tree Trimming

No trees outside Amtrak right-of-way would be removed or trimmed as part of the Proposed Action. However, selected trees within existing Amtrak right-of-way would be trimmed or potentially removed where they would interfere with construction work (see Section 3.17). Trees and vegetation must be kept clear of the power lines in order to reduce the potential for fires. Tree trimming plans are included in Appendix C, as drawings C-0200 through C-0232 of the Paoli to Bryn Mawr plans and drawings C-0217 through C-0232 of the Bryn Mawr to Zoo plans. These plans were generated by the design team using aerial photographs, site photographs, and field views in order to minimize impacts and illustrate the amount of tree trimming required prior to constructing the Proposed Action.

The design team went through three rounds of analysis to minimize the amount of pre-construction tree trimming. First, the designers ran an analysis on the base design using a 15' clearance envelope to the conductors. Locations that impacted trees located on private property were noted, and avoidance options were suggested to Amtrak. The first option which was used at select locations was to decrease the trimming to a 10' clearance envelope, which resolved roughly 40% of the impacts. The remaining 60% of the impacts were addressed with the second option, redesigning the transmission lines at those locations to a stacked configuration. As a result of these efforts, tree trimming would be confined entirely within existing Amtrak right-of-way.

Typical construction plans may have provided a blanket statement that construction crews should trim trees along the entire Proposed Action corridor or even clear cut trees along the corridor. Instead, construction tree trimming plans and design modifications were implemented to avoid direct impacts to trees located on private properties while also minimizing the visual impacts of the tree trimming from these private properties. Therefore, the Proposed Action may result in potential minor, long-term visual impacts.

3.12.2.3 Historic Resources

Photographic mock-ups of the catenaries are included in Appendix G within the meeting materials for the Section 106 Consulting Parties meeting held on June 1, 2015. As seen in the mock-ups, there would be a change in the physical features due to the increase in catenary structure height. However, the change of the catenary structures within the railroad's setting would remain compatible with the current setting. Catenary structures have been a part of the railroad's setting and operation since this 18 mile segment of the rail line was electrified in 1915. Changing the catenary structure height would not adversely affect the setting of historic properties in the APE or their ability to convey historic significance. The *Determination of*

Effects Report (August 2015) describes the process by which visual impacts were assessed at the location of each of the NRHP-eligible or -listed historic resources within the APE. Where it was found that the Proposed Action could affect historic properties, the Criteria of Adverse Effect (36 CFR § 800.5) were applied to determine if the taller catenaries, tree trimming, and/or replacement of the Bryn Mawr Substation would alter the characteristics of the historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

As detailed in Section 3.2.4, PA SHPO concurred that the Proposed Action would have an adverse effect to one of the 27 historic properties: the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg). The adverse effect is attributed to the removal of 276 catenary structures as well as the Bryn Mawr Substation, which are considered contributing resources. The installation of the new catenary structures would introduce new visual elements in the district; however, they would remain compatible with the resource and would not diminish the overall integrity of the railroad and its significant features. The catenary poles and tree trimming would not introduce visual elements that would diminish the integrity of the property's significant historic features. The Proposed Action would, however, demolish the existing Bryn Mawr Substation (a contributing resource) and introduce a new substation that would diminish the integrity of the setting and feeling of the railroad property at Bryn Mawr. In response, instead of using a prefabricated structure or constructing a purely utilitarian-looking Signal Power House and Control House Building, the Proposed Action designers would incorporate characteristics of the original building into the new design. As a result of mitigation measures proposed through a Draft MOA to mitigate adverse effects (see Appendix D), minor impacts on cultural resources are anticipated.

3.12.2.4 Residences, Parks, and Wildlife Refuges

Residences, parks, and one wildlife refuge would also experience minor visual impacts from the increase in catenary structure height. Amtrak has minimized visual effects by removing PECO commercial transmission lines from the design in order to minimize catenary structure heights. The new catenary structures would be higher than the existing structures, but catenary structures have been part of the railroad's setting since the rail line was electrified in 1915. Also, the design for the new catenary structures calls for the poles to be placed within 10 feet of the existing structures, which would reduce the change to the viewshed. Furthermore, the new catenary poles would be grey, which is believed by the design team to be visually unobtrusive.

Residences, parks, and one wildlife refuge would also experience minor visual impacts from the proposed tree trimming. Trees would be trimmed where they interfere with construction work and where the trees present a fire hazard due to proximity to the power lines. Tree trimming plans are included in Appendix C, as drawings C-0200 through C-0232 of the Paoli to Bryn Mawr plans and drawings C-0217 through C-0232 of the Bryn Mawr to Zoo plans. These plans were generated by the design team in order to illustrate the minimum amount of tree trimming

required prior to construction, rather than providing a blanket statement that construction crews should trim trees along the entire Proposed Action corridor or clear cut trees along the corridor. Instead, the tree trimming plans were created to minimize the visual impact.

There do not appear to be any residences, parks, or wildlife refuges in the vicinity of the Bryn Mawr Substation; therefore its replacement is not anticipated to have visual impacts on residences, parks, or wildlife refuges.

3.13 Floodplains

No adverse impacts to floodplains or regulatory floodways are anticipated. Federal Protection of floodplains is afforded by Executive Order 11988, “Floodplain Management,” and by implementation of federal regulations under 44 CFR Part 9. These regulations direct federal agencies to undertake actions to avoid impacts on floodplain areas by structures built in flood-prone areas. A floodplain is a low land adjacent to a river, lake, or ocean. Floodplains are designated by the rarity of a flood that is large enough to inundate them (e.g., 1-percent-annual-chance).

The Federal Emergency Management Agency (FEMA) has primary responsibility for identifying flood-prone areas and utilizes Flood Insurance Rate Maps (FIRMs) to illustrate waterways and associated floodplains.

3.13.1 Affected Environment

There is one location within the corridor where the rail line crosses the 1-percent-annual-chance floodplain, in this case a Zone A floodplain without base flood elevations or floodway. This floodplain is associated with the East Branch Indian Creek in Montgomery County around Mile Post 7.1 (FIRM 42091C0369E), where the creek travels under the rail line via a culvert. The Zone A floodplain is mapped at a width of approximately 50 feet (0.009 mile) under the Proposed Action corridor, which is 0.05 percent of the total Proposed Action length. Hardings Run crosses through a culvert underneath the Proposed Action area within Delaware County around Mile Post 12.5 (FIRM 42045C0036F) but does not have a FEMA-designated floodplain. These FIRMs are attached as Appendix H.

3.13.2 Environmental Consequences

The proposed improvements do not include the widening of existing railroad embankments, placement of fill within floodplains, or new or modified stream and floodplain crossings. The rail line is on a tall, steep embankment in the vicinity of the Zone A floodplain associated with East Branch Indian Creek, and neither existing catenary structures nor proposed catenary structures would be located in the FEMA-designated floodplain. Therefore, the Proposed Action would have no direct or indirect permanent or temporary impacts on FEMA mapped 1-percent-annual-chance floodplains or regulatory floodways, and the Proposed Action is in compliance with Executive Order 11988.

3.14 Water Quality

This section provides an overview of surface and groundwater resources and the water quality of those resources in the Proposed Action area.

3.14.1 Affected Environment

Online mapping tools including NEPAassist, eMapPA, PADEP Water Attribute Viewer for the Enterprise (WAVE), and Google Earth were queried to identify sole source aquifers and waterways. Sole source aquifers are not present within the Proposed Action area. East Branch Indian Creek passes through a culvert below the Proposed Action area within Montgomery County around Mile Post 7.1 and is a designated Warm Water Fishes (WWF) stream. Hardings Run is a designated Cold Water Fishes (CWF) stream, which crosses through a culvert below the Proposed Action area within Delaware County around Mile Post 12.5. The WWF and CWF designations are provided in Title 25, Chapter 93 of the Pennsylvania Code.

3.14.2 Environmental Consequences

There would be no direct impacts to these waterways, because there would be no construction within waterways. Impacts caused by erosion and sedimentation during construction activities and/or changes to infiltration, would be minimized through the contractor's implementation of an ESCP or NPDES Permit, as applicable. Sole source aquifers would not be impacted by the Proposed Action.

3.15 Endangered Species

Various species receive federal and state protection. Agency records and databases were reviewed to determine if federal or state-listed threatened or endangered species are known to exist in the Proposed Action area. Threatened and endangered species coordination has been conducted with the Pennsylvania Game Commission (PGC), the PA DCNR, the Pennsylvania Fish and Boat Commission (PFBC), and the U.S. Fish and Wildlife Service (U.S. FWS).

3.15.1 Affected Environment

PGC, PA DCNR, and PFBC indicated that threatened and endangered species are in the vicinity of the Proposed Action area, but that no threatened and endangered species are within the Proposed Action area. U.S. FWS indicated that no federally listed species under U.S. FWS jurisdiction are known or likely to occur in the Proposed Action area.

3.15.2 Environmental Consequences

All four agencies indicated that no impacts to threatened and endangered species are anticipated. These determinations are valid for two years from the date of response, which ranges from August 9, 2016 to September 8, 2016.

Because these determinations will expire before the Proposed Action has been constructed, Amtrak will update the clearances, prior to construction.

Agency correspondence is included in Appendix I.

3.16 Public Safety

The Proposed Action would occur within existing Amtrak right-of-way, and safety would be maintained through the standard regulations and precautions taken to prevent the public from entering the right-of-way both during construction and operation of the upgraded catenary system.

Additionally, a Soil Management Plan was developed to specify waste management procedures and worker health and safety precautions for construction in areas of environmental concern within the construction zone. The soil management plan is provided in Appendix F. No negative impacts to public safety are anticipated.

3.17 Construction

3.17.1 Timing and Sequencing

Depending on funding availability, construction may take place between Fall 2017 to Fall 2022. The Proposed Action may be completed in three phases, starting with the Bryn Mawr Substation, followed by the transmission line between Paoli and Bryn Mawr, and finally the transmission line between Bryn Mawr and Zoo. The construction of the new Bryn Mawr Substation would be continuous and would take approximately 18 months. The catenary structure replacements would be rolled out along the rail line. At each new structure location, it would take a few days or nights for foundation construction and then, later, a few nights for erection of the structures. These two activities could be weeks or months apart depending on track time and final construction schedule. After all new structures are in place, a wire train would work its way along the route, detaching the overhead contact system from the old structures and attaching it to the new structures. The wire train would be able to cover multiple spans per day or night shift. A similar process would occur for the installation of the new transmission line, which would also cover ground at a rate of multiple spans per shift. The old poles would then be torched at the base or in sections from the top down, and the foundations left in place. Amtrak would develop and implement a Community Notification Plan to communicate construction timing and phasing to the community.

3.17.2 Property Acquisitions and Easements

All construction would occur in the existing Amtrak right-of-way, so permanent right-of-way acquisition would not be necessary. Temporary construction easements would not be necessary either. Track-mounted construction equipment would be used for the catenary structure replacements, and there is adequate space in the Bryn Mawr Substation right-of-way for construction vehicle parking. There are open spaces at various locations within the existing Amtrak right-of-way, which could be used for construction stockpiles and staging areas. Three potential locations for construction stockpiles and staging areas are indicated on the aerial mapping included as Appendix B. These three potential sites are located near the Zoo

Substation, the Bryn Mawr Substation, and the Paoli Substation, with no parks, wildlife refuges, or other sensitive resources in the immediate vicinity. The area near the Paoli Substation is part of the Paoli Railyard Superfund site. If Amtrak chooses to use this site for a construction stockpile/staging area, then Amtrak would need to coordinate with U.S. EPA and to follow their restrictions. This area is also being used for a construction stockpile/staging area for the Paoli Station construction project. It is anticipated that existing access points already under Amtrak's control would be utilized and that access through private property would not be needed. Therefore, it appears that temporary construction easements would not be necessary for stockpiling, staging, or access.

3.17.3 Transportation

No parking spaces would be utilized during construction for construction stockpiling or by construction vehicles, which would have other options within the Bryn Mawr Substation construction zone. An increase in traffic from construction vehicles at Bryn Mawr Substation, and elsewhere within the Proposed Action area, is not anticipated to be an issue. Impacts to rail service would also be minimized. If track time is available, some work may be completed during the day, but most construction would be completed during temporary, overnight track outages and occupancy by the contractor. As the construction activities would take place largely overnight and would involve one outer rail line at a time, rail service would be maintained throughout construction. The impacts to parking and rail service are considered minor. No impacts to bus, bicycle, or pedestrian access and use are anticipated during or after construction, including at the Bryn Mawr Station parking lot.

3.17.4 Noise and Vibration

During construction, Amtrak will be responsible for conforming to all applicable best management practices concerning construction activities including, but not limited to noise, vibration, and light emissions. Track-mounted equipment would be used for the catenary structure replacements, which would prevent vibrations that traditional wheel-mounted construction equipment creates when driving past residences. Blasting would not be allowed.

3.17.5 Air Quality

Construction of the Proposed Action may temporarily result in exhaust emissions of particulate matter and nitrogen oxides in addition to generation of airborne dust. Except for the work at Bryn Mawr substation, there would be minimal earth disturbance and therefore minimal dust is expected. Dust control measures would be part of the construction contractor's responsibilities and will follow best management practices typically observed or recommended by the Commonwealth of Pennsylvania. It is anticipated that the construction of the Philadelphia Zoo to Paoli Transmission Line Project would not cause violations of the NAAQS or exceed the general conformity *de minimis* levels.

3.17.6 Tree Trimming

No trees outside Amtrak right-of-way would be removed or trimmed as part of the Proposed Action. However, selected trees within existing Amtrak right-of-way would be trimmed or potentially removed where they would interfere with construction work. Tree trimming plans were generated by the design team in order to minimize impacts and illustrate the minimum amount of tree trimming required prior to constructing the Proposed Action. These plans are included in Appendix C, as drawings C-0200 through C-0232 of the Paoli to Bryn Mawr plans and drawings C-0217 through C-0232 of the Bryn Mawr to Zoo plans. Amtrak typically uses a wood chipper and dump truck to break down and remove tree limbs from the work area.

3.17.7 Water Quality

Impacts caused by erosion and sedimentation during construction activities and/or changes to infiltration, would be minimized through the contractor's implementation of an ESCP or NPDES Permit, as applicable.

3.17.8 Contingency Planning

An Unanticipated Discoveries Plan (see Appendix D) and a Soil Management Plan (see Appendix F) have been created, in case unanticipated archaeological resources or contaminated soils are encountered during construction.

3.18 Indirect Impacts

"Indirect impacts" are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

The Proposed Action's improvements would improve service reliability and could have an indirect impact of increasing ridership on the Keystone Corridor. Any additional ridership could increase use of parking and roadways near train stations. An increase in train ridership could reduce vehicular traffic on arterial roadways with corresponding benefits by reducing traffic congestion and gasoline consumption. The Proposed Action could also indirectly cause expansion in transit-oriented development around train stations with strong ridership. Some of the stations are already in highly developed areas, while others currently have green space in the immediate vicinity. Local review boards would assess potential environmental impacts on land use, water, sewer, and traffic. Because the Proposed Action will not increase service but only service quality, the potential for increased transit-oriented development is not anticipated to be significant.

3.19 Cumulative Impacts

A "cumulative impact" is the impact on the environment that results from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future

actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts may include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or resulting from smaller actions that individually have no significant impact. Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern.

For purposes of this discussion, cumulative impacts were considered for rail projects along Amtrak's Keystone Corridor East (Philadelphia to Harrisburg), between 2006 and 2026 (10 years pre and post 2016).

Several projects have been recently completed or are underway throughout Amtrak's Keystone Corridor East (Philadelphia to Harrisburg). Examples include:

- infrastructure program to repair bridges, construct new power substations, install continuous welded rail and concrete ties, and improve communication and signaling systems (completed in 2006)
- upgrades to the Lancaster, Elizabethtown, and Mount Joy train stations (Lancaster and Elizabethtown construction completed in 2013, Mount Joy bid in 2016)
- three at-grade crossing eliminations in Lancaster County (construction completed in 2014)
- signal system upgrades (proposed from Philadelphia to Paoli, underway from Paoli to Parkesburg, completed from Parkesburg to Harrisburg)
- interlocking improvements at several locations throughout the Keystone Corridor East (in various stages from planning to construction)
- proposed relocation or upgrade of the Philadelphia, Ardmore, Villanova, Paoli, Exton, Downingtown, Coatesville, Parkesburg, Middletown, and Harrisburg train stations (planning or design underway)

Within the Paoli area, located at the western terminus of the Proposed Action area, there are five projects with independent need and utility in various stages of development on Amtrak's Keystone Corridor East.

The following is a brief summary of each project:

- **Americans with Disabilities Act (ADA) Compliant Passenger Train Station** – The design and construction for this project is funded by PennDOT, SEPTA, Amtrak, and FTA and will be in construction from 2016 to 2019. The purpose of this project is to bring the existing Paoli Amtrak station into ADA compliance with a high level center

platform and an overhead pedestrian bridge with elevators. All work will be within existing right-of-way.

- **Interim Interlocking Improvements** – PennDOT and FRA fund the conceptual design for this project, with no funding or time frame currently in place for construction. The purpose of this project is to replace the functionality of the existing interlocking in the proximity of Paoli but not in the existing location. All work will be within the existing right-of-way.
- **New Darby Road Bridge** – PennDOT funds the design and construction for this project, and construction is anticipated to start in spring 2019. The new Darby Road Bridge will replace the existing Valley Road Bridge. This new bridge, on new alignment, will require the acquisition of right-of-way. The relocated bridge will address the immediate safety concerns associated with poor sight distance, pedestrian/vehicular conflicts, and poor traffic circulation in the area of Paoli surrounding the station.
- **Completion of the Paoli Transportation Center** – The design and construction for this project is currently unfunded and unscheduled. The completion of the Paoli Transportation Center will involve construction of a new level boarding westbound platform to accommodate a new 3rd track (local) through Paoli Station.
- **Final Interlocking Build Out** – The design and construction for this project is currently unfunded and unscheduled. The Final Paoli Interlocking Build Out Project would add an additional track on the north side of the current tracks and new crossovers.

The infrastructure, signal system, at-grade crossing, interlocking, and Philadelphia Zoo to Paoli Transmission Line projects will improve reliability, speed, and/or safety on the Keystone Corridor East (Philadelphia to Harrisburg). The station projects will bring facilities into ADA compliance and will enhance customer amenities. All of these improvements are expected to encourage the transit-oriented development already occurring around stations and to increase ridership. As detailed above, all of these projects, including the proposed Philadelphia Zoo to Paoli Transmission Line Project, are anticipated to have positive cumulative transportation and economic development impacts.

A NEPA document, or the state equivalent, was completed or will be required for each of the above-referenced projects. This process requires that any adverse impacts be considered and minimized and mitigated, to the extent possible. For work that potentially has limited federal or state environmental documentation, such as the transit-oriented development around train stations with strong ridership, it is assumed that local review boards will review and require mitigation for resultant impacts to water, sewer, and vehicular traffic. Therefore, it is concluded that any adverse cumulative impacts from these projects on Amtrak's Keystone Corridor East will be minor.

3.20 Mitigation

This EA concludes that the Proposed Action, which includes mitigation measures and environmental commitments, would have no potential significant environmental impacts. Table 3 details impacts and the mitigation measures which have already been incorporated into the planning and design of the Proposed Action in order to avoid and/or minimize potential impacts.

Table 3: Mitigation Measures	
Potential Impact	Mitigation
<p>Cultural Resources:</p> <p>The Proposed Action would have an adverse effect on the National Register eligible Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) due to the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation.</p>	<p>A Draft MOA has been developed between the FRA, Amtrak, RRMPA, SEPTA, and PA SHPO, which includes commitments by Amtrak to minimization measures and mitigation measures to minimize impacts and to mitigate potential adverse effects to the Pennsylvania Railroad Main Line and its contributing resources.</p> <p>Minimization Measures:</p> <ul style="list-style-type: none"> A. Limit catenary structure heights (60-75 feet at most locations); B. Implement targeted tree trimming program to avoid universal trimming or clear cutting; C. Place new catenary structures as near as practicable to existing catenary structures; and D. Avoid physical impacts to train stations along the Proposed Action corridor. <p>Mitigation Measures:</p> <ul style="list-style-type: none"> A. Documentation <ul style="list-style-type: none"> 2. Record the Bryn Mawr Substation and related catenary system to Historic American Engineering Record Documentation Level II. B. Interpretation <ul style="list-style-type: none"> 5. Provide an interpretive sign inside the Bryn Mawr station building. 6. Donate materials and elements of the catenary system that Amtrak or its contractors remove from the historic Bryn Mawr Substation to RRMPA. 7. Make financial contribution to RRMPA dedicated to the conservation of donated materials. 8. Make reasonable efforts to provide to RRMPA contact information for current or former Amtrak Electric Traction Department employees for the purpose of conducting oral history interviews. C. Design <ul style="list-style-type: none"> 4. Design new substation to be consistent with the materials,

Table 3: Mitigation Measures	
Potential Impact	Mitigation
	<p>color, and texture of the existing Bryn Mawr Substation (e.g. buff brick exterior walls), but will not mimic the historic building to make it clear that the new buildings are non-historic and do not create a false sense of history. Amtrak will submit the proposed design to PA SHPO for review and approval prior to construction; PA SHPO will provide comments within 30 days of receipt of the draft design.</p> <ol style="list-style-type: none"> 5. Incorporate the “Bryn Mawr Substation” sign currently on the historic building into a new retaining wall or other landscape feature adjacent to the Bryn Mawr Substation site. 6. Offer the bricks from the historic Bryn Mawr Substation for salvage upon removal of the building. <p>An Unanticipated Discoveries Plan has also been created and appended to the Draft MOA, in case any unanticipated archaeological resources are encountered during construction.</p> <p>The Draft MOA’s stipulations for minimization, mitigation, and design measures will minimize impacts and mitigate the adverse effect of the Proposed Action.</p>
<p>Transportation: Parking spaces would be lost at the Bryn Mawr Train Station.</p>	<p>Replacement of the Bryn Mawr Substation would affect parking that Amtrak leases to SEPTA at the Bryn Mawr Train Station. Impact avoidance is not feasible, so the impact would be minimized by designing the substation to have the smallest possible footprint without losing the intended functionality. While this compact substation design would result in higher construction costs, it would reduce the number of affected parking spaces from 36 to 12.</p>

Table 3: Mitigation Measures	
Potential Impact	Mitigation
Visual: Taller catenary poles, tree trimming, and the replacement of the Bryn Mawr Substation were identified as concerns for potential impacts to the area adjacent to the Proposed Action during the public involvement process.	<p>While the Draft MOA for Cultural Resource impacts serves to minimize and mitigate potential impacts to cultural resources, some of the same Draft MOA minimization and mitigation measures serve to minimize and mitigate visual impacts. Minimization measures include:</p> <ul style="list-style-type: none"> A. Limit catenary structure heights (60-75 feet at most locations); B. Implement targeted tree trimming program to avoid universal trimming or clear cutting; C. Place new catenary structures as near as practicable to existing catenary structures; and D. Design new Bryn Mawr Substation to be consistent with the materials, color, and texture of the existing Bryn Mawr Substation (e.g. buff brick exterior walls), but will not mimic the historic building to make it clear that the new buildings are non-historic and do not create a false sense of history.

Additionally, during the final design and construction phases, Amtrak would incorporate environmental commitments described in Section 6.0 to minimize and mitigate potential impacts.

4.0 DRAFT SECTION 4(F) EVALUATION

4.1 Section 4(f) Requirements

The impacts of the Proposed Action were considered in relation to Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. § 303), and subsequent revisions and amendments (hereafter referred to as “Section 4(f)”). The intention of Section 4(f) is to protect certain resources, including publicly owned wildlife and waterfowl refuges, publicly owned park and recreation areas that are open to the public, and public or privately owned historic sites.

FRA may approve a transportation project that proposes to use a Section 4(f) resource only if the use will have a *de minimis* impact on the property, or if there is no prudent and feasible alternative to using that land and the project involves all possible planning to minimize harm.

FRA may determine that a transportation program or project that uses a historic resource will have a *de minimis* impact on the historic resource only if, pursuant to the Section 106 consultation process:

- The transportation program or project will have no adverse effect on the historic site; or
- There will be no historic properties affected by the transportation program or project; and

- FRA's finding has received written concurrence from the applicable State historic preservation officer; and
- FRA has developed its finding in consultation with parties consulting as part of the Section 106 consultation process.

With respect to parks, recreation areas, or wildlife or waterfowl refuges, FRA may make a finding of *de minimis* impact only if:

- After public notice and opportunity for public review and comment, FRA finds that the transportation program or project will not adversely affect the activities, features, and attributes of the park, recreation area, or wildlife or waterfowl refuge eligible for protection under this section; and
- The finding has received concurrence from the officials with jurisdiction over the park, recreation area, or wildlife or waterfowl refuge.

A feasible and prudent avoidance alternative is defined as follows:

- (1) A feasible and prudent avoidance alternative avoids using Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the resource to the preservation purpose of the statute.
- (2) An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.
- (3) An alternative is not prudent if:
 - (i) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
 - (ii) It results in unacceptable safety or operational problems;
 - (iii) After reasonable mitigation, it still causes:
 - (A) Severe social, economic, or environmental impacts;
 - (B) Severe disruption to established communities;
 - (C) Severe disproportionate impacts to minority or low income populations; or
 - (D) Severe impacts to environmental resources protected under other Federal statutes;
 - (iv) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
 - (v) It causes other unique problems or unusual factors; or

- (vi) It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

All possible planning means that all reasonable measures identified to minimize harm or mitigate for adverse impacts and effects must be included in the project.

4.2 Section 4(f) Resources

As described in Section 3.3, there are three publicly owned parks and one publicly owned wildlife refuge located adjacent to the Proposed Action area, including Merion Botanical Park, Narberth Playground, Sharpe Park and Bird Sanctuary, and North Wayne Park.

As detailed in Section 3.2.3, 27 historic resources within the APE were deemed individually NRHP-eligible or listed. Accordingly, Section 4(f) uses of the 27 historic resources are considered individually.

4.3 Section 4(f) Use

A Section 4(f) “use” can result from permanent incorporation or easement, temporary occupancy, or constructive use. Permanent incorporation involves right-of-way acquisition of Section 4(f) land as part of a transportation project, typically converting the land from a Section 4(f) property to a transportation facility. When a transportation agency acquires a permanent easement, the underlying ownership of the land may remain with the original owner but the transportation owner acquires a permanent interest in the use or maintenance of some portion of the property that disrupts its Section 4(f) function; examples include maintenance access, utility access, and drainage features. Temporary occupancy may be necessary during construction of the transportation project; examples include staging or access areas. A constructive use does not involve physical use of a Section 4(f) property but involves proximity impacts so severe that the protected activities, features, or attributes of the property are substantially impaired; examples include noise, vibration, and visual impacts, or access restrictions.

4.3.1 Public Parks and Wildlife Refuge

There would be no use of the three publicly owned parks and one publicly owned wildlife refuge adjacent to the Proposed Action area. No park or wildlife refuges would be permanently or temporarily occupied as part of the Proposed Action. Construction information is detailed in Section 3.17 and explains that construction activities at any given location on the rail line would last for several days or nights, would generate minimal airborne dust, and would not include blasting. Neither the parks nor the wildlife refuge are near the Bryn Mawr Substation, where the Proposed Action includes the construction of a new traction power substation and demolition of the existing substation. Additionally, proximity impacts to the parks and wildlife refuge during construction would not be so severe that the protected activities, features, or attributes of the property are substantially impaired. Long-term visual impacts to the parks and the wildlife refuge caused by the installation of taller catenary structures and tree trimming are described in

Section 3.12, and would not be so severe that the protected activities, features, or attributes of the property would be substantially impaired. Also, the Proposed Action does not involve any changes in rail service, such as speed or number of trains, so there would be no potential constructive use based on service. In summary, there would be no temporary or permanent use of the public parks and the wildlife refuge resulting from temporary occupancy, permanent incorporation or easement, or proximity impacts so severe that the protected activities, features, or attributes of the property are substantially impaired.

4.3.2 Historic Resources

The Proposed Action will require use of five individually eligible or listed historic resources: Merion Station, Haverford Station, Villanova Station, Wayne Station, and Stafford Station. The Proposed Action will take place within the boundaries of Wayne and Stafford Stations. The boundaries of the other historic properties are unclear, and the Proposed Action will occur in close proximity to these historic properties and could be construed as within the historic property boundaries. The PA SHPO concurred with FRA's finding, developed through the Section 106 consultation process, of no adverse effect on these five historic properties within the boundaries of the Proposed Action work area. Furthermore, PA SHPO also concurred with FRA's finding of no adverse effect on an additional 5 historic properties and no historic properties affected for 16 historic properties, all outside of the Proposed Action work area, on July 19, 2016 (see Section 3.2.3). Consulting Parties were involved in the effects determination in June 2013, September 2014, June 2015, and September 2015 (see Section 3.2.1). Therefore, pursuant to 49 U.S.C. § 303(d), a Section 4(f) finding of *de minimis* impact is applicable to the 5 resources with findings of no adverse effect within the Proposed Action work area. PA SHPO concurred with this Section 4(f) *de minimis* use finding on March 7, 2017. There is no Section 4(f) use of the other 5 resources with findings of no adverse effect or the 16 historic properties with findings of no historic properties affected, with all of these properties being outside of the Proposed Action work area. Section 4(f) requirements are considered satisfied for these 21 historic resources.

The Proposed Action will also require Section 4(f) use of the existing catenary structures and the Bryn Mawr Substation. Through the Section 106 consultation process, FRA has made a finding of adverse effect for one historic property within the APE (see Section 3.2.3.2), the Pennsylvania Railroad Main Line. The Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) would be adversely affected due to the removal and replacement of the existing catenary structures and the demolition of the Bryn Mawr Substation, both of which are contributing resources to Pennsylvania Railroad Main Line. PA SHPO has concurred with this finding. Because the Proposed Action will result in a use of and an adverse effect on the Pennsylvania Railroad Main Line (i.e., the Proposed Action will result in more than a *de minimis* impact), the Draft Section 4(f) Evaluation (Evaluation) below was prepared to determine if there is a prudent and feasible alternative (avoidance alternative) to using that land and the Proposed Action involves all possible planning to minimize harm.

4.4 Alternatives Considered to Avoid Section 4(f) Resources

To meet the requirements of Section 4(f), this Evaluation considers feasible and prudent avoidance alternatives to avoid the use of Section 4(f) resources, including the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg).

4.4.1 No-Build Alternative

Under the No-Build Alternative, no replacements or upgrades would be completed for catenary structures, catenary wires, and transmission lines. However, this alternative is not prudent because 1) it would compromise the Keystone Corridor to a degree that is unreasonable to proceed in light of the Proposed Action's purpose and need; and 2) it would result in unacceptable operational problems.

The purpose of the Proposed Action is to maintain and improve passenger train service using electric-powered trains on the Keystone Corridor East between the Zoo Substation (Mile Post 2.5) in central Philadelphia and the Paoli Substation (Mile Post 20.5). In addition, a goal of the Proposed Action is to simplify maintenance, including maintenance access. The needs addressed by the Proposed Action include deteriorated catenary poles and related electrical equipment, insufficient traction power, and also the location of transmission lines on former Pennsylvania Railroad right-of-way that complicate maintenance of these lines.

The No-Build Alternative would not achieve this purpose but risk a breakdown of the system and loss of service, as these components are showing signs of substantial deterioration and frequently require extensive repairs that increase safety risk for Amtrak's maintenance crews. A system breakdown and loss of service along this stretch of the corridor would likely incapacitate the Keystone Corridor, therefore causing unacceptable operational problems. The No-Build Alternative would also leave the Bryn Mawr Substation standing, with no upgrades completed. Amtrak typically spaces traction power substations every 10 miles, but there are no traction power substations in the 18 mile segment between the Zoo Substation and the Paoli Substation. Trains operated by Amtrak and SEPTA could still experience low-voltage conditions in the middle of this section of railroad during periods of higher train density.

Given its inability to meet the Proposed Action's purpose and need and result in unacceptable operational problems, the No-Build Alternative is not a feasible and prudent avoidance alternative.

4.4.2 Alternatives Considered but Eliminated from Detailed Analysis

Three alternatives to the Proposed Action were considered but eliminated from detailed analysis, as described in Section 2.3. One alternative would leave the existing Bryn Mawr Substation in place, would build a new traction power substation elsewhere in Bryn Mawr, and would replace the existing catenary structures. A second alternative would replace the catenary poles and incorporate new transmission lines on the former Pennsylvania Railroad right-of-way rather than on the Amtrak right-of-way. A third alternative would involve removing the catenary structures

and all catenary wires and transmission lines and reverting to use of diesel trains. None of these three alternatives would completely avoid using Section 4(f) resources. Because the existing catenary structures within the Proposed Action area have far exceeded their original design life and are in danger of structural failure, they would need to be removed for safety reasons under each alternative.

In addition to the fact that these alternatives would not completely avoid use of Section 4(f) resources, they would also fail to meet the Proposed Action's purpose and need. Additionally, alternatives two and three would result in unacceptable safety or operational problems. Therefore, none of these three alternatives constitute a feasible and prudent avoidance alternative.

4.5 All Possible Planning to Minimize Harm

Because there is no feasible and prudent avoidance alternative and only one feasible and prudent alternative (the Proposed Action), the Proposed Action will be pursued but will incorporate reasonable measures to minimize harm and mitigate for adverse impacts and effects to the Pennsylvania Railroad Main Line.

Coordination with the PA SHPO and Consulting Parties has occurred throughout the course of the NEPA process (see Section 3.2.1). Amtrak has incorporated Consulting Party feedback about minimization measures into the Proposed Action, keeping the height of the new catenary structures as low as possible while meeting safety requirements, locating new catenary structures within close proximity to the existing ones to reduce changes to the visual landscape, and producing construction tree trimming plans to minimize the amount of tree trimming along the right-of-way. It was determined that with these measures, the introduction of the increased catenary structure heights and the limited tree trimming would not result in visual effects that would adversely affect the characteristics that qualify any of the historic resources in the APE for listing in the NRHP.

Additionally, FRA, Amtrak, RRMPA, SEPTA, and the PA SHPO drafted an MOA to memorialize the agreed upon mitigation measures to address the potential adverse effect of the Proposed Action on the Pennsylvania Railroad Main Line (Philadelphia to Harrisburg) and its contributing resources. The Draft MOA includes commitments regarding documentation, interpretation, and design (Section 3.2.4). Documentation and interpretation commitments relate to the recordation of the Bryn Mawr Substation and related catenary system, the provision of an interpretive sign inside the Bryn Mawr Station that focuses on the history of the Pennsylvania Railroad Main Line, the donation of elements of the catenary system that are removed from the Bryn Mawr Substation to be used by RRMPA with an accompanying conservation allowance, and an opportunity for RRMPA to conduct oral history interviews of current or former Amtrak Electric Traction Department employees. Per the design commitments, Amtrak will design the new Bryn Mawr Substation to be consistent with the materials, color, and texture of the existing substation without mimicking the historic building; will incorporate the existing Bryn Mawr

Substation sign into a landscape feature in the vicinity of the new substation; and will offer the bricks from the historic substation building for salvage by Consulting Parties and/or the public (see Section 3.2.4).

On October 8, 2015, PA SHPO concurred with the effects determination and stated that there has been adequate consultation with PA SHPO and the Consulting Parties regarding ways to avoid, minimize, or mitigate effects on historic properties. Cultural resources correspondence is included as Appendix D.

4.6 Section 4(f) Conclusion

There would be no use of the three publicly owned parks and one publicly owned wildlife refuge adjacent to the Proposed Action area resulting from temporary occupancy, permanent incorporation or easement, or proximity impacts so severe that the protected activities, features, or attributes of the property are substantially impaired.

Pursuant to 49 U.S.C. § 303(d), a Section 4(f) finding of *de minimis* impact is applicable to the 5 resources with findings of no adverse effect within the Proposed Action work area. There is no Section 4(f) use of the other 5 resources with findings of no adverse effect or the 16 historic properties with findings of no historic properties affected, with all of these properties being outside of the Proposed Action work area. Section 4(f) requirements are considered satisfied for these 26 historic resources.

The Proposed Action will require use of the existing catenary structures and the Bryn Mawr Substation. Through Section 106 consultation, FRA made a finding of adverse effect for one historic property within the APE (see Section 3.2.4). The Pennsylvania Railroad Main Line would be adversely affected due to the removal and replacement of the catenary structures and the demolition of the Bryn Mawr Substation, both of which are contributing resources to the Pennsylvania Railroad Main Line. PA SHPO has concurred with this finding. Because the Proposed Action will result in a use of and an adverse effect on the Pennsylvania Railroad Main Line, avoidance alternatives and measures to minimize harm were considered as part of the Section 4(f) process. The analysis above determined that there are no feasible and prudent avoidance alternatives, but all possible planning to minimize harm would be incorporated into the Proposed Action to preserve the historic attributes of the railroad.

5.0 AGENCY, PUBLIC, AND CONSULTING PARTY INVOLVEMENT

5.1 Agency Coordination

Agency coordination was conducted with the FRA, Amtrak, RRMPA, SEPTA, and the PA SHPO regarding cultural resources, as detailed in Section 3.2 and enclosed as Appendix D. The comments received from these agencies were incorporated into the cultural resources analyses, as well as the Draft MOA. Agency coordination was also conducted with the PGC, the PA

DCNR, the PFBC, and the U.S. FWS regarding threatened and endangered species, as detailed in Section 3.15 and enclosed as Appendix I. Each of these regulatory agencies replied that no impacts to threatened and endangered species were anticipated.

5.2 Public and Consulting Party Involvement

Feedback on the Proposed Action was solicited from public officials, stakeholders, Consulting Parties, and the general public at stakeholder and public meetings. Information was presented and handed out, with comments solicited/provided through question-and-answer discussions and written surveys (see Sections 4.2.1 and 4.2.2).

5.2.1 Public Activities and Section 106 Meetings

Public involvement and Section 106 meetings are listed in Table 4 and are described in the following text.

Table 4: Public Involvement and Section 106 Meetings		
Date	Event	Purpose
4/25/2012	Public Officials and Stakeholders Meeting	Introduce the Proposed Action, discuss and receive input on the Proposed Action from the community.
4/30/2012	Public Officials and Stakeholders Meeting	Introduce the Proposed Action, discuss and receive input on the Proposed Action from the community.
6/6/2012	General Public Meeting	Introduce the Proposed Action, discuss and receive input on the Proposed Action from the general public.
5/28/2013	Public Officials and Stakeholders Meeting	Inform attending parties of Proposed Action summary, status, and updates.
5/29/2013	Public Officials and Stakeholders Meeting	Inform the public of Proposed Action summary, status, and updates.
6/6/2013	General Public Meeting	Inform the general public of Proposed Action summary, status, and updates.
6/6/2013	Section 106 Consulting Parties Meeting #1	To review and discuss archaeology investigation, historic resources data collection, and mitigation options.
9/15/2014	Section 106 Consulting Parties Meeting #2	To review and discuss revised APE, eligibility, and potential effects.
6/1/2015	Section 106 Consulting Parties Meeting #3	To provide an update of the Final Determination of Eligibility report, discuss the <i>Draft Determination of Effects Report</i> , and discuss potential mitigation options for impacts to historic resources.

Table 4: Public Involvement and Section 106 Meetings		
Date	Event	Purpose
9/2/2015	HARB/ Section 106 Consulting Parties Meeting #4	To review and discuss the Draft MOA.
8/2/2016	Public access provided to cultural resources reports	To publish the Effects Report and the Addendum to the Effects Report on the FRA website for public access.
4/13/2017	Public access provided to the EA and Draft Section 4(f) Evaluation	To publish the EA and Draft Section 4(f) Evaluation on the FRA website and to post hard copies for public access. To distribute notices of EA and Draft Section 4(f) Evaluation and public meeting to Consulting Parties, Tribes, stakeholders, and the general public.
5/4/2017	Public Meeting	To present the EA and Draft Section 4(f) Evaluation to the public and provide opportunity for comment.

Meetings for both public officials and community organizations were held on April 25 and April 30, 2012, at Harcum College (near the Bryn Mawr Station) and at Radnor Middle School (near the Wayne Station). An information packet including a Proposed Action summary, catenary drawings, and maps of the cultural resources was mailed or emailed to a total of 137 public officials and community organizations. These media outlets were notified of the meeting: *Daily Local News* of Chester County, the *Daily Times* of Delaware County, *The Main Line Times* which covers the Philadelphia area, *The Philadelphia Inquirer/Daily News*, and *The Times Herald* of Montgomery County. Surveys were provided in order to solicit comments from attendees. Questions and answers from these meetings were compiled and distributed at subsequent meetings.

A third public meeting was held on June 6, 2012, at Villanova University (near the Villanova Station). A notice announcing the public meeting was published in *Daily Local News*, *The Philadelphia Inquirer/Daily News*, *The Main Line Times*, the *Mainline Suburban Media News*, *Radnor Patch*, *Ardmore Patch*, *Tredyffrin-Easttown Patch*, and *Bryn Mawr Patch*.

Two more public officials and stakeholders meetings were held on May 28 and May 29, 2013, at the Lower Merion Township Building and Radnor Township Building. An information packet was emailed to 77 public officials and stakeholders and mailed to 115 contacts in advance of the meeting. A notice announcing the meeting was published in *Daily Local News*, *Daily Times*, *Mainline Suburban Media News*, *The Philadelphia Inquirer/Daily News*, and *The Times Herald*.

A public meeting was held on June 6, 2013 at the Villanova University Connelly Center Cinema. In preparation for the meeting, flyers were posted at 17 railroad stations and a news release was

sent to the the *Daily Local News*, the *Mainline Suburban Media News*, *The Philadelphia Inquirer/Daily News*, *The Main Line Times*, *Radnor Patch*, *Ardmore Patch*, *Tredyffrin-Easttown Patch*, and *Bryn Mawr Patch*.

Section 106 Consulting Parties meeting #1 was held on June 6, 2013, at the Villanova University Connelly Center Cinema. In preparation, 35 invitation packets were mailed to Consulting Parties, with follow-up phone calls and email messages. The purpose of the meeting was to review and discuss archaeological studies, historic resources data collection, and mitigation options.

Section 106 Consulting Parties meeting #2 was held on September 15, 2014, at the Lower Merion Township Building. In preparation, a meeting notice was mailed to 39 Consulting Parties, with follow-up emails to 7 Consulting Parties. The purpose of the meeting was to review and discuss revised APE, eligibility, and potential effects.

Section 106 Consulting Parties meeting #3 was held on June 1, 2015, at Bryn Mawr College. In preparation, a meeting notice was mailed to 39 Consulting Parties, with follow-up emails to 7 Consulting Parties. The purpose of the meeting was to provide an update of the Final Determination of Eligibility report, discuss the *Draft Determination of Effects Report*, and discuss potential mitigation options for impacts to historic resources. Attendees were provided with comment forms, and it was agreed to hold a final Section 106 Consulting Parties meeting in September to review the Draft MOA and receive comments.

Section 106 Consulting Parties meeting #4 was held on September 2, 2015 at Radnor Township HARB. In preparation, a meeting notice was mailed to 41 Consulting Parties, with follow-up emails to 12 Consulting Parties. The purpose of the meeting was to review and discuss the Draft MOA.

Detailed notes from these meetings are provided in Appendix G, and the questions and concerns discussed at the meetings are summarized in Table 5 in Section 5.2.2.

5.2.2 Public Comments

Members of the public provided numerous comments on the Proposed Action. Table 5 lists each of the meetings detailed in Section 5.2.1 and categorizes the comments received at these meetings. Comment categories are sorted by prevalence, with the comments most frequently made appearing higher in the table. The concerns most commonly noted were visual impacts and cultural resources impacts.

Table 5 also describes how and where the comments have been discussed in this EA. For example, visual impacts were discussed during the referenced meetings (see Appendix G for meeting summaries) and also in this EA document in Sections 3.2.4 (Draft Memorandum of Agreement), 3.12 (Visual), 3.20 (Mitigation), and 6.0 (Environmental Commitments).

The noted concerns were considered during the design and environmental review processes. This resulted in:

- Alterations to the design, in terms of pole height;
- Changes to the level of NEPA documentation from Categorical Exclusion to EA;
- Creation of mitigation measures (Section 3.20); and
- Generation of environmental commitments (Section 6.0).

Table 5: Questions and Concerns Noted at Public Involvement Meetings										
	4/25/12 & 4/30/12 (PO)	6/6/12 (P)	5/28/13 & 5/29/13 (PO)	6/6/13 (P)	6/6/13 (CP)	9/15/14 (CP)	6/1/15 (CP)	9/2/15 (CP)	Meeting References	Discussion
Visual impacts	•	•	•	•	•	•	•	•	8	Meetings; Sections 3.2.4, 3.12, 3.20, 6.0.
Cultural resources impacts		•	•	•	•	•	•	•	7	Meetings; Sections 3.2, 3.12.2.1, 3.20, 6.0.
Construction noise and lights		•	•	•		•	•	•	6	Meetings; Sections 3.17.4, and 6.0.
Construction sequence / schedule	•		•	•			•	•	5	Meetings; Sections 2.1, 3.17.1, and 6.0.
Fate of retired equipment	•		•		•		•	•	5	Meetings and Section 2.1.
Continuation of public outreach		•	•			•	•	•	5	Meetings; Sections 4.2 and 6.0.
Bryn Mawr Substation impacts	•		•			•	•	•	5	Meetings; Sections 3.2.3.2, 3.2.4, 3.4.2, 3.12.2.1, 3.20, 6.0.
Vibration	•		•	•	•				4	Meetings; Sections 3.5 and 3.17.4.
Costs and funding type	•	•	•		•				4	Meetings and Section 2.1.
Electro-magnetism and electrical current safety			•	•	•				3	Meetings and Section 3.6.
Construction access through private property	•	•	•						3	Meetings; Sections 3.9 and 3.17.2.
Right-of-way			•	•				•	3	Meetings; Sections 3.9 and 3.17.2.
Maintenance and cleaning of Amtrak drainage facilities			•				•	•	3	Discussed at meetings as a track maintenance issue. Not related to Proposed Action.
Long-term noise		•	•						2	Meetings and Section 3.5.
Level of environmental documentation (initially considered a Categorical Exclusion)			•						1	Discussed at meeting, and level of documentation was subsequently changed to an EA.
Purpose and need	•								1	Meeting and Section 1.1.
Dead tree limbs over Cricket Condominiums							•		1	Message has been relayed within Amtrak. Not related to Proposed Action.
Impact on Sharpe Park				•					1	Meeting; Sections 3.3, 3.12.2.2, and 5.3.

PO: Public Officials/Stakeholders P: Public CP: Consulting Parties

6.0 ENVIRONMENTAL COMMITMENTS

Mitigation measures have already been incorporated into the planning and design of the Proposed Action in order to avoid and minimize potential impacts. These mitigation measures are described in Section 3.20. As detailed in Table 6, Amtrak would incorporate these mitigation measures as environmental commitments during the final design and construction phases to minimize and mitigate potential impacts.

Table 6: Environmental Commitments

Environmental Commitment

- Amtrak would comply with the cultural resources MOA, which includes minimization and mitigation measures that require documentation, interpretation, and design elements to be included as part of the Proposed Action and in the Proposed Action Design Plan Notes. The Draft MOA is enclosed in Appendix D.
- The Draft MOA includes an Unanticipated Discoveries Plan that Amtrak would implement if any archaeological resources are encountered during construction.
- Tree trimming plans have been included in the Proposed Action’s Design Plans. The tree trimming plans identify specific tree trimming locations, to avoid universal tree trimming or clearcutting throughout the Proposed Action area prior to construction. The tree trimming plans are enclosed in Appendix C, as drawings C-0200 through C-0232 of the Paoli to Bryn Mawr plans and drawings C-0217 through C-0232 of the Bryn Mawr to Zoo plans.
- Amtrak would develop and implement a Community Notification Plan to communicate construction timing and phasing to the community.
- Applicable best management practices concerning construction activities including, but not limited to, vibration, noise, and light emissions would be incorporated into the Proposed Action’s Design Plan Notes, as appropriate. Design plan notes would prohibit blasting construction activities. The contractor would be responsible for conforming to all plan note requirements during construction.
- Threatened and endangered species clearances with the PGC, the PA DCNR, the PFBC, and the U.S. FWS would be re-coordinated by Amtrak, as needed or required by state and federal regulations prior to construction.
- The construction contractor would follow Amtrak’s established hazardous materials and waste procedures during the Proposed Action. Old electrical transformers, which may contain polychlorinated biphenyl (PCB) oil, would be removed and replaced as part of the Proposed Action. Amtrak’s established procedures for testing and draining transformers prior to disposal would be implemented. Amtrak maintains contracts with multiple firms for emergency response and waste hauling services.
- In case hazardous waste may be encountered during construction, a Soil Management Plan has been created (Appendix F). This plan specifies waste management procedures and precautions for construction activities within areas of environmental concern within the construction zone.

7.0 NEXT STEPS

A public meeting will be held to present the EA to the public for comment on the EA and on the Proposed Action itself. The EA will be available on FRA's project website and in hard copy at several locations near the Proposed Action. A distribution list is in Section 9.0. Public comments will be considered and incorporated into the FONSI and/or the Proposed Action's design, as appropriate. The NEPA process will conclude with either a FONSI, evidencing the FRA's NEPA decision, or a determination to proceed to preparation of an EIS.

8.0 LIST OF PREPARERS

Federal Railroad Administration

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Michelle Fishburne, P.E., Environmental Protection Specialist – document review

Brandon Bratcher, Environmental Protection Specialist – document review

Amtrak

Joanna Pardini, P.E., Senior Manager, Catenary Design – document review

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Craig Caldwell, Senior Manager, Environmental – document review

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Daren Petroski, P.E., Vice President, Transit Design Group Leader – document review

Stell Environmental

Allen Heist, PMP, Project Manager – document review

Patricia Baker, Cultural Resources Group Manager – document review

Alison Ross, M.S., Architectural Historian – document review

Michael Baker International

Angela Bard Welt, Environmental Specialist – document writing

9.0 DISTRIBUTION LIST

A digital copy of the EA will be posted on FRA's website¹ to provide an opportunity for public review and comment.

Printed copies of the EA will also be provided to the 22 following entities, in order to facilitate public access:

- Lower Merion Township Municipal Building (75 E. Lancaster Avenue, Ardmore, PA 19003)
- Tredyffrin Township Municipal Building (1100 Duportail Road, Berwyn, PA 19312)
- Delaware County Courthouse (201 West Front Street, Media, PA 19063)
- Montgomery County Courthouse (2 E. Airy Street, Norristown, PA 19401)
- Philadelphia City Planning Commission (1515 Arch Street, Philadelphia, PA 19102)
- Chester County Planning Commission (601 Westtown Road, Suite 270, West Chester, PA 19380)
- Philadelphia City Hall (City Hall, Room 313, Philadelphia, PA 19107)
- Narberth Borough Municipal Building (100 Conway Avenue, Narberth, PA 19072)
- Haverford Township Municipal Building (2325 Darby Road, Haverford, PA 19083)
- Radnor Township Municipal Building (301 Iven Avenue, Wayne, PA 19087)
- Easttown Township Municipal Building (566 Beaumont Road, Devon, PA 19333)
- Willistown Township Municipal Building (688 Sugartown Road, Malvern, PA 19355)
- Bryn Mawr's Ludington Library (5 S. Bryn Mawr Avenue, Bryn Mawr, PA 19010)
- Tredyffrin Public Library (582 Upper Gulph Road, Strafford, PA 19087)
- Paoli Library (18 Darby Road, Paoli, PA 19301)
- Easttown Library & Information Center (720 First Avenue, Berwyn, PA 19312)
- Ardmore Library (108 Ardmore Avenue, Ardmore, PA 19003)
- Bala Cynwyd Library (131 Old Lancaster Road, Bala Cynwyd, PA 19004)
- Penn Wynne Library (130 Overbrook Parkway, Wynnewood, PA 19096)
- Charles L. Durham Branch - Free Library of Philadelphia (3320 Haverford Avenue, Philadelphia, PA 19104)

¹ <https://www.fra.dot.gov/Page/P0810>

- Wynnefield Branch - Free Library of Philadelphia (5325 Overbrook Avenue, Philadelphia, PA 19131)
- Overbrook Park Branch - Free Library of Philadelphia (7422 Haverford Avenue, Philadelphia, PA 19151)

An informational flyer will accompany the EA hard copies, as well as a cover letter inviting the recipient to announce the availability of the EA for public review and comment on their municipal or library website.

Postcards or emails announcing the availability of the EA for public review and comment will be sent to 163 entities, including Consulting Parties, Tribes, and other identified stakeholders.

A notice will also be published in the *Radnor Patch*, the *Ardmore Patch*, the *Tredyffrin-Easttown Patch*, the *Bryn Mawr Patch*, *The Daily Local*, *Delcon News*, *Daily Times*, *The Times Herald*, *Main Line News / Main Line Times*, *City Suburban News*, *Philadelphia Daily News*, and *The Philadelphia Inquirer*. Newspapers will be asked to post the notice in their hard copy edition as well as on their website.

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